Order No.MTNC040209A1
B19

Service Manual

HDTV MONITOR

Simplified

PT-47WXD64J

P9

This simplified service manual is issued to add listed model to the main service manual order No. MTNC031147C1(PT-47WXD63G). A difference parts list is included in this simplified service manual. Please file and use this simplified service manual togetherwith the main service manual order No. MTNC031147C1(PT-47WXD63G).

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

1. Safety precautions

General guidelines

An isolation transformer should always be used during the servicing of a receiver whose chassis is not isolated from AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injuryfrom electrical shocks. It will also protect the receiver from being damaged by accidental shorting that may occur during servicing.
When servicing, observe the original lead dress, especially in the high voltage circuit. Replace all damaged parts (also parts that show signs of overheating.)
Always replace protective devices, such as fish paper, isolation resistors and capacitors, and shields after servicing the receiver. Use only manufacturer’s recommended rating for fuses, circuits breakers, etc.
High potentials are present when this receiver is operating. Operation of the receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautionswhen servicing high voltage equipment.
Extreme care should be practiced when handling the picture tube. Rough handling may cause it to implode due to atmospheric pressure. (14.7 lbs per sq. in.). Do not nick or scratch the glass or subject it to any undue pressure. When handling, usesafety goggles and heavy gloves for protection. Discharge the picture tube by shorting the anode to chassis ground (not to the cabinet or to other mounting hardware). When discharging connect cold ground (i.e. dag ground lead) to the anode with a wellinsulated wire or use a grounding probe.Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to x ray radiation.
The test picture tube used for servicing the chassis at the bench should incorporate safety glass and magnetic shielding. The safety glass provide shielding for the tube viewing area against x ray radiation as well as implosion. The magnetic shieldlimits the x ray radiation around the bell of the picture tube in addition to the restricting magnetic effects. When using a picture tube test jig for service, ensure that the jig is capable of handling 50kV without causing x ray radiation.
Before returning a serviced receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. Do not use a line isolation transformer when testing.

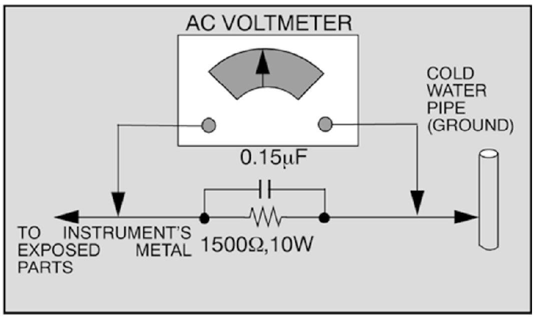
Leakage current cold check

Unplug the A.C. cord and connect a jumper between the two plug prongs.Measure the resistance between the jumpered AC plug and expose metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a returnpath to the chassis, the reading should be between 240k Ω and 5.2M Ω . If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.

Leakage current hot check

Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check.
Connect a 1.5k Ω 10 watt resistor in parallel with a 0.15 μ F capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.
Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.
Repeat the procedure and measure the voltage present with all other exposed metallic parts.
Verify that any potential does not exceed 0.75 volt RMS. A leakage current tester (such a Simpson model 229, Sencore model PR57 or equivalent) may be used in the above procedure, in which case any current measure must not exceed 0.5 milliampere.If any measurement is out of the specified limits, there is a possibility of a shock hazard and the receiver must be repaired and rechecked before it is returned to the customer.

Hot check circuit



Insulation test

Connect an insulation tester between an exposed metallic part and A.C. line. Apply 1080VAC/ 60Hz for 1 second. Confirm that the current measurement is 0.5mA ~ 2.0mA. Repeat test with other metallic exposed parts.

X-ray radiation

WARNING

The potential source of x-ray radiation in the PTV set is in the high voltage section and the picture tube.

NOTE

It is important to use an accurate, calibrated high voltage meter.

Apply all black video signals (1080i) and confirm high voltage measures 31.5 ± 1.0kV. If the high

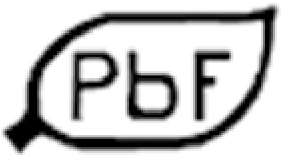
voltage is not within the range, change C514 (in D-Board) to 1800pF, 2000pF, 2400pF or 2700pF until the desired value isobtained.Apply NTSC white pattern and confirm the high voltage measures 30.1 ± 1.5kV. Apply HD 1080i white pattern and confirm the high voltage measures 30.1 ± 1.5kV.

2. About lead free solder (PbF)

NOTE

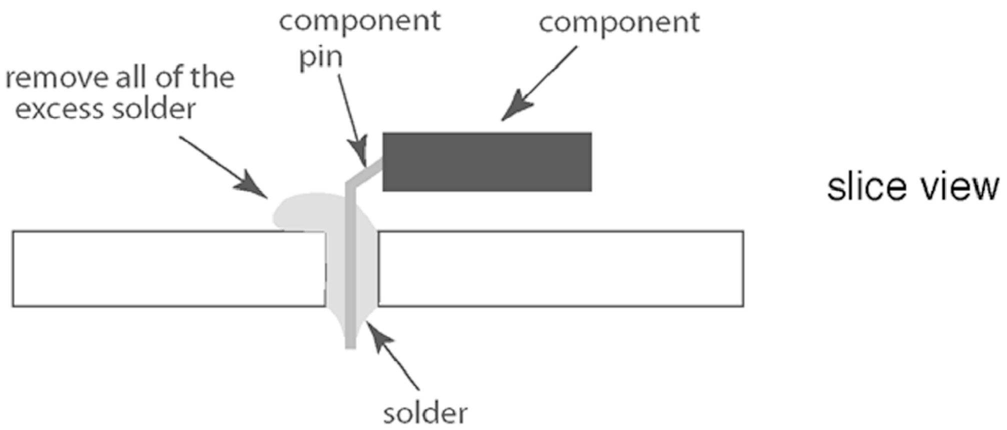
Lead is listed as (Pb) in the periodic table of elements. / In the information below, Pb will refer to lead solder, and PbF will refer to Lead Free Solder. / The lead free solder used in our manufacturing process and discussed below is (Sn+Ag+Cu). / Thatis Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it’s manufacture due to environmental conservation issues. For / service and repair work, we’d suggest the use of Pb free solder as well, although Pb solder may be / used. / PCBs manufacturedusing lead free solder will have the “PbF” or a leaf symbol stamped on the / back of PCB.



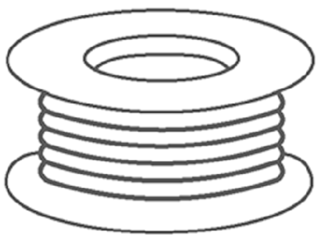
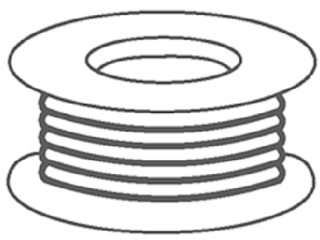
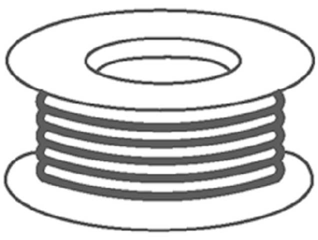
CAUTION

- **Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30 ~ 40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).**
- **Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C). / If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If thisis not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.**
- **After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side.**


component pin
component
remove all of the excess solder
slice view
solder

Suggested Pb free solder

There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also beused.

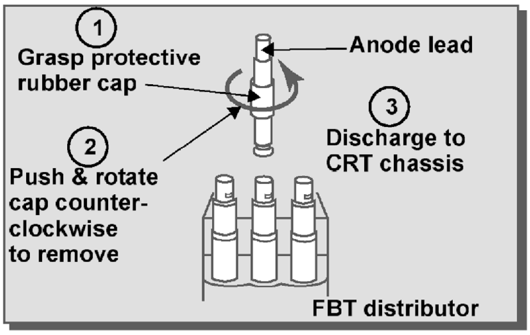
0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

3. Important safety tests

Measuring H.V.

The anode caps are cemented to the CRTs. To gain access for high voltage measurement, remove the red CRT's anode lead from the flyback transformer distributor. Grasp the anode lead protective cap at its bottom and squeeze it against thelocking cap body inside, rotate 1/4 turn counter clockwise and pull the anode lead sleeve out of the FBT distributor. Connect a high voltage positive lead from your H.V. meter to the FBT distributor, and the common negative lead to cold ground

FBT leads removal


① Grasp protective rubber cap
Anode lead
③ Discharge to CRT chassis
② Push & rotate cap counter-clockwise to remove
FBT distributor

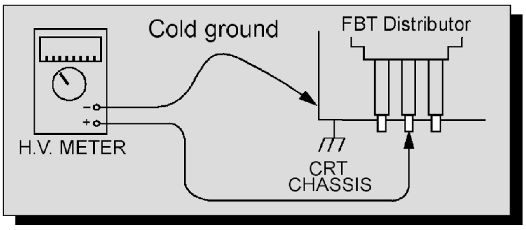
Note:
Reinsert the anode lead into the FBT distributor until it is tightly and fully seated. Turn the locking cap clockwise to lock in place.

(EHT) Protector operation check
With the cabinet back removed, apply a nominal 120V A.C. to the PTV.

Over voltage test
Preparation:

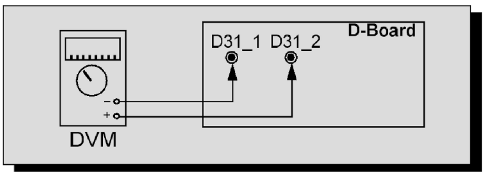
1. **Turn PTV "OFF"**
2. **Connect a NTSC signal generator to the antenna terminal.**
3. **Connect DVM positive lead to D31 pin 2 and negative lead to D31 pin 1 on D-Board**

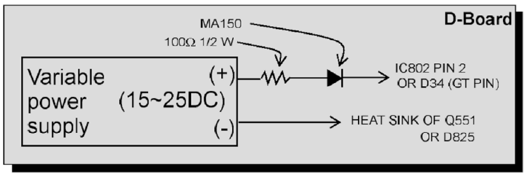
H.V. measurement


Cold ground
FBT Distributor
H.V. METER
CRT
CHASSIS

4. **Connect a H.V. meter (static type, class 0.1) with high voltage leads to high voltage distributor on FBT.**

DVM and power supply connection


D31_1
D31_2
D-Board
DVM


MA150
100Ω 1/2 W
D-Board
Variable power supply
(+)
(15~25DC)
(-)
IC802 PIN 2 OR D34 (GT PIN)
HEAT SINK OF Q551 OR D825

5. **Connect the 15 ~ 25 V DC variable power supply positive lead to D34 or IC802 pin 2 (D Board) and negative lead to heat sink of Q551 or D825**

Procedures:

1. **Apply a NTSC white pattern.**

2. Turn PTV ON.
3. Adjust the picture or brightness controls so that the DVM reads 12.4 ± 0.4 volts.
4. Increase the variable power supply until set turns off. The set should turn off at 12.4 ± 0.4 volts (DVM) and high voltage less than 36.4kV.
5. If the DVM reading is other than 12.4 ± 0.4 volts, readjust picture or brightness control and repeat steps 3.
6. Turn off the variable supply and confirm that the set will turn on by pulling out AC plug socket and connecting it again.

4. Service notes

NOTE

These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.

Leadless chip component (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board,however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.

Chip resistor have a three digit numerical resistance code, 1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6k Ω resistor, 0 = 0 Ω (jumper).

Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

Component removal

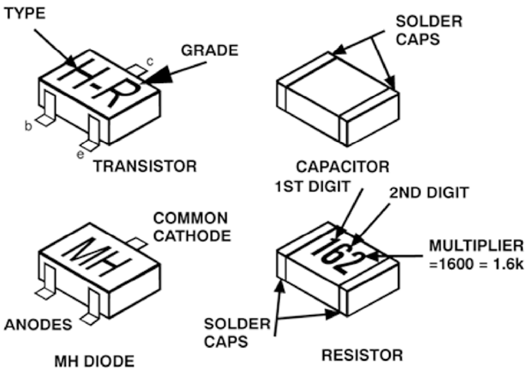
1. Use solder wick to remove solder from component end caps or terminal.

2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.

Chip component installation

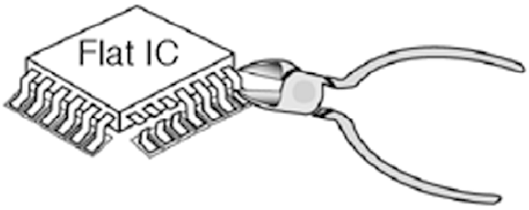
1. Put a small amount of solder on the board soldering pads.
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.

Chip components

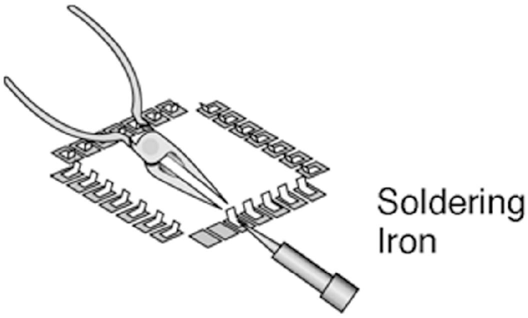

TYPE
GRADE
H-R
c
b
e
TRANSISTOR
SOLDER CAPS
CAPACITOR
1ST DIGIT
2ND DIGIT
COMMON CATHODE
MH
162
MULTIPLIER =1600 = 1.6k
ANODES
SOLDER CAPS
MH DIODE
RESISTOR

How to replace flat ic (required tools)

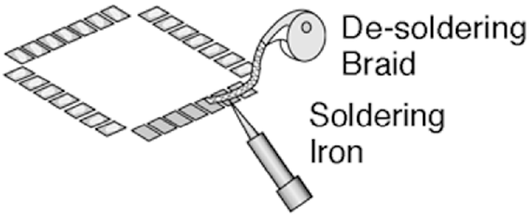
1. Remove the solder from all of the pins of a Flat IC by using a desolder braid



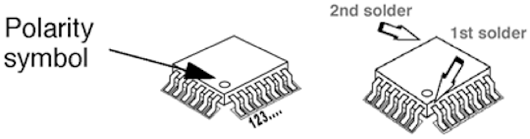
2. Put the iron wire under the pins of the Flat IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.


Soldering
Iron

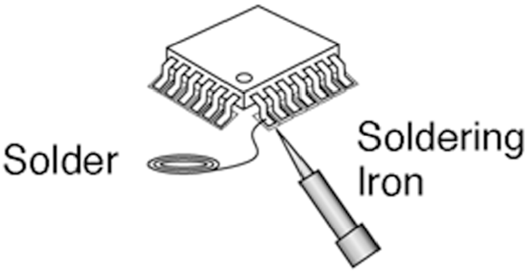
3. **Remove the solder from all the pads of the Flat IC by using a de solder braid**


De-soldering
Braid
Soldering
Iron

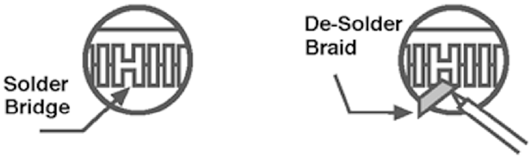
4. **Position the new Flat IC in place (apply the pins of the Flat IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol**


Polarity
symbol
123....
2nd solder
1st solder

5. **Solder all pins to the soldering pads using a fine tipped soldering iron**


Solder
Soldering
Iron

6. **Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a desolder braid as shown in the figure below**


Solder
Bridge
De-Solder
Braid

IMPORTANT

To protect against possible damage to the solid state devices due to arcing or static discharge, make certain that all ground wires are securely connected

CAUTION

The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the receiver to avoid damage to the test equipment or to the chassis. Connect the test equipment to the proper ground(HOT or COLD) when servicing, or incorrect voltages will be measured.

WARNING

This receiver has been designed to meet or exceed applicable safety and x-ray radiation protection as specified by government agencies and independent testing laboratories.

To maintain original product safety design standards relative to x-ray radiation and shock and fire hazard, parts indicated with the symbol ⚠ on the schematic must be replaced with identical parts. Order parts from the manufacturer'sparts center using the parts numbers shown in this service manual, or provide the chassis number and the part reference number.

For optimum performance and reliability, all other parts should be replaced with components of identical specification.

5. Receiver feature table

FEATURE/MODEL	PT-47WXD64J
CHASSIS	DP830
MICRO	256K
MENU LANGUAGE	ENGLISH
CLOSED CAPTION	X
V-CHIP (USA/CANADA)	USA
CHANNEL INFO BANNER	X
ATSC / QAM TUNING	X
VIDEO INPUT SKIP	SKIP
CHANNEL COUNT	181
PIP (1T), 2T PIP (2T), 2T SPLIT	2T SPLIT
2RF	X
REMOTE CONTROL (W/LIGHT)	EUR7627Z10
CRT SUPPLIER	MDDA (CENTAUR)
SCREEN	W/PROT SCREEN
CHASSIS	P9
COMB FILTER	3D Y/C
HEC/VEC (X=BOTH)	X
NEW YNR	X
VM	X (SELECTABLE)
V/A NORM (X=BOTH)	X
COLOR TEMP	X
AIP	X
PRESET/INPUT LABELING	X
VIDEO PICTURE MEMORY	X
DIGITAL SCAN RATE	1080i, 540p
NTSC LINE DOUBLER	540p PROGRESSIVE (NEW)
MTS/SAP/DBX	X
BUILT-IN AUDIO POWER	10W x 2
No. OF SPEAKERS	2
BASS/BALANCE/TREBLE CONTROL	X
AI SOUND	X
SURROUND	X
SPATIALIZER/BBE	BBE/VIVA
A/V IN (REAR/FRONT)	4(3/1)
A/V PROGRAM OUT	X
AUDIO OUT (FAO: F, VAO:V)	F
COMPONENT INPUT (Y, Pb, Pr)	2
S-VIDEO INPUT (REAR/FRONT)	2/1
HDMI/HDCP INPUT	1
DIGITAL AUDIO OUT (AC-3/PCM)	1
CableCARD Slot	1(BACK)
(PCMCIA/SD)	1(FRONT)

Note:
Specifications are subject to change without notice or obligation.

6. Board description table

BOARD	PART NUMBER	DESCRIPTION
A-BOARD	TNP2AH051	MAIN CHASSIS
D-BOARD	TNP2AH056	POWER SUPPLY
* DC-BOARD	TNP2AA151	CONVERGENCE CIRCUIT
* DG-BOARD	TNP2AA132	MPU, VIDEO SIGNAL PROCESSIN
* DV-BOARD	TNP2AA133	HDMI DECODER
* DT-BOARD	TNP2AA144	HIGH DEFINITION TUNER
G-BOARD	TNP2AA150	FRONT A/V INPUT
H-BOARD	TNP2AA134	REAR A/V INPUTS
K-BOARD	TNP2AA149	KEYBOARD PANEL
* JG-BOARD	TNP2AA140	SD,PC JPEG VIEWER
LB-BOARD	TNP2AA147AB	BLUE PRT
LG-BOARD	TNP2AA146AB	GREEN PRT
LR-BOARD	TNP2AA145AB	RED PRT
R-BOARD	TNPA0615AB	IR SENSOR
T-BOARD	TNP2AA136	SUB-POWER

NOTE
When ordering a replacement board assembly, append an “S” to the board number

EXAMPLE
To order the A Board, the replacement board is TNP2AH051S

*

DC-Board, DG-Board, DV-Board, DT-Board and JG-Board are non-serviceable boards, except for the connectors JG1, JG2, JK5001, JK5002, JK8002 and JK8003. If any of these boards are defective, replace it with a new one.

7. Parts list

7.1. Description of abbreviations guide

Important Safety Notice

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use manufacturer's specified parts.

Abbreviation of part name and description

1. Resistor
Example :
ERD25TJ104 **C** 100KΩ, **J**, 1/4W
Type Allowance

Type	Allowance
C : Carbon	F : ± 1%
F : Fuse	G : ± 2%
M : Metal Oxide Metal Film	J : ± 5% K : ± 10%
S : Solid	M : ± 20%
W : Wire Wound	

2. Capacitor
Example :
ECKF1H103ZF **C** 0.01µF, **Z**, 50V
Type Allowance

Type	Allowance
C : Carbon	C : ± 0.25pF
E : Electrolytic	D : ± 0.5pF
P : Polyester Polypropylene	F : ± 1pF G : ± 3%
T : Tantalum	J : ± 5%
	K : ± 10%
	L : ± 15%
	M : ± 20%
	P : ± 100%, -0%
	Z : ± 80%, -20%

7.2. Difference Parts List

Ref. No.	Part No.	Part Name & Description	Remarks
		OTHERS	
M001	TKY2AA3006S	FRONT CABINET	
M002	TKB2AA0176S	WOOD CABINET	
M003	TAS2AA0026	SPEAKER 15 WATTS(WOOFER)	
M004	TKP2AA0629S	SPEAKER GRILLE	
M005	TXFKP04JSER	DOOR PANEL	
M006	TXFKP05JSER	CONTROL PANEL	
		OTHER ACCESORIES	
M007	TQB2AA0504	OWNERS MANUAL	

NOTE:

Please refer to the PT-47WXD63G main service manual (order No. MTNC031147C1) for a complete parts list, replacing the components listed in the table above.

Order No. MTNC031147C1
B19

Service Manual

HDTV MONITOR

PT-47WXD63G / PT-53WXD63G

P9

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This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1. Safety precautions

General guidelines

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Always replace protective devices, such as fish paper, isolation resistors and capacitors, and shields after servicing the receiver. Use only manufacturer's recommended rating for fuses, circuits breakers, etc.

High potentials are present when this receiver is operating. Operation of the receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautionswhen servicing high voltage equipment.

Extreme care should be practiced when handling the picture tube. Rough handling may cause it to implode due to atmospheric pressure. (14.7 lbs per sq. in.). Do not nick or scratch the glass or subject it to any undue pressure. When handling, usesafety goggles and heavy gloves for protection. Discharge the picture tube by shorting the anode to chassis ground (not to the cabinet or to other mounting hardware). When discharging connect cold ground (i.e. dag ground lead) to the anode with a wellinsulated wire or use a grounding probe.Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to x ray radiation.

The test picture tube used for servicing the chassis at the bench should incorporate safety glass and magnetic shielding. The safety glass provide shielding for the tube viewing area against x ray radiation as well as implosion. The magnetic shieldlimits the x ray radiation around the bell of the picture tube in addition to the restricting magnetic effects. When using a picture tube test jig for service, ensure that the jig is capable of handling 50kV without causing x ray radiation.

Before returning a serviced receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. Do not use a line isolation transformer when testing.

Leakage current cold check

Unplug the A.C. cord and connect a jumper between the two plug prongs.Measure the resistance between the jumpered AC plug and expose metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a returnpath to the chassis, the reading should be between 240k Ω and 5.2M Ω . If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.

Leakage current hot check

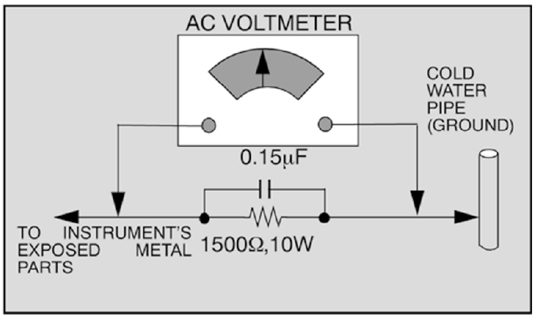
Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check. Connect a 1.5k Ω 10 watt resistor in parallel with a 0.15 μ F capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.

Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.

Repeat the procedure and measure the voltage present with all other exposed metallic parts. Verify that any potential does not exceed 0.75 volt RMS. A leakage current tester (such a Simpson model 229, Sencore model PR57 or equivalent) may be used in the above procedure, in

which case any current measure must not exceed 0.5 milliampere.If any measurement is out of the specified limits, there is a possibility of a shock hazard and the receiver must be repaired and rechecked before it is returned to the customer.

Hot check circuit



Insulation test

Connect an insulation tester between an exposed metallic part and A.C. line. Apply 1080VAC/ 60Hz for 1 second. Confirm that the current measurement is 0.5mA ~ 2.0mA. Repeat test with other metallic exposed parts.

X-ray radiation

WARNING

The potential source of x-ray radiation in the PTV set is in the high voltage section and the picture tube.

NOTE

It is important to use an accurate, calibrated high voltage meter.

Apply all black video signals (1080i) and confirm high voltage measures 31.5 ± 1.0kV. If the high voltage is not within the range, change C514 (in D-Board) to 1800pF, 2000pF, 2400pF or 2700pF until the desired value isobtained.Apply NTSC white pattern and confirm the high voltage measures 30.1 ± 1.5kV. Apply HD 1080i white pattern and confirm the high voltage measures 30.1 ± 1.5kV.

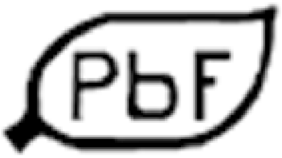
2. About lead free solder (PbF)

NOTE

Lead is listed as (Pb) in the periodic table of elements. / In the information below, Pb will refer to lead solder, and PbF will refer to Lead Free Solder. / The lead free solder used in our manufacturing process and discussed below is (Sn+Ag+Cu). / Thatis Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

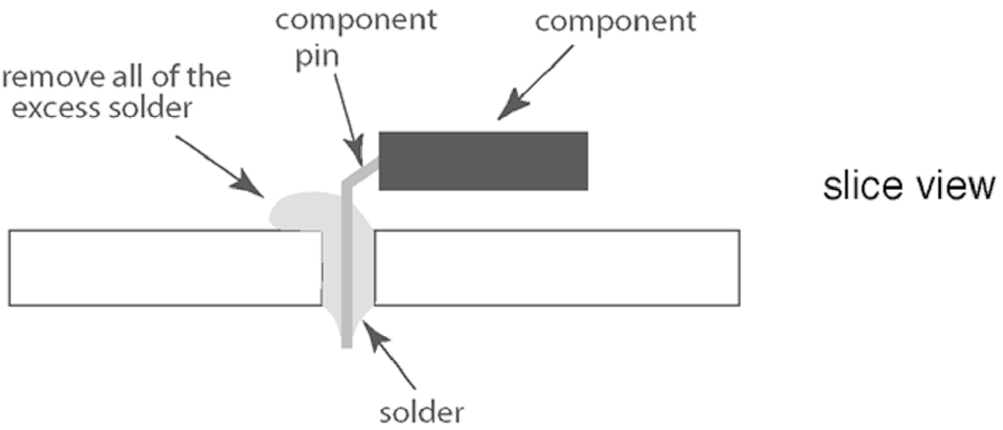
This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For / service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may

be / used. / PCBs manufacturedusing lead free solder will have the “PbF” or a leaf symbol stamped on the / back of PCB.



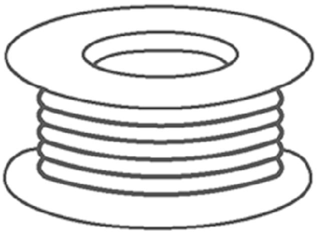
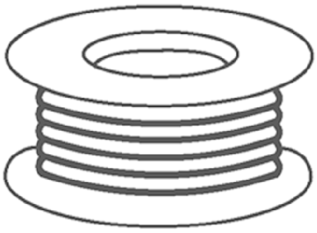
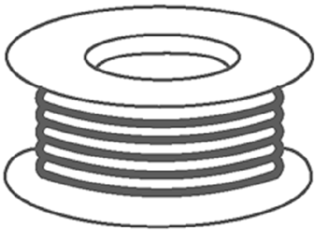
CAUTION

- **Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30 ~ 40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).**
- **Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C). / If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If thisis not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.**
- **After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side.**



Suggested Pb free solder

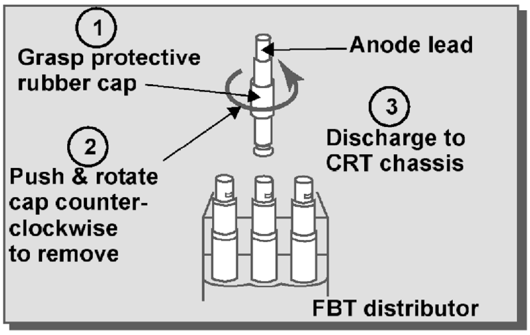
There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also beused.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

3. Important safety tests

Measuring H.V.
The anode caps are cemented to the CRTs. To gain access for high voltage measurement, remove the red CRT's anode lead from the flyback transformer distributor. Grasp the anode lead protective cap at its bottom and squeeze it against thelocking cap body inside, rotate 1/4 turn counter clockwise and pull the anode lead sleeve out of the FBT distributor. Connect a high voltage positive lead from your H.V. meter to the FBT distributor, and the common negative lead to cold ground

FBT leads removal


①
Grasp protective rubber cap
Anode lead
③
Discharge to CRT chassis
②
Push & rotate cap counter-clockwise to remove
FBT distributor

Note:
Reinsert the anode lead into the FBT distributor until it is tightly and fully seated. Turn the locking cap clockwise to lock in place.

(EHT) Protector operation check
With the cabinet back removed, apply a nominal 120V A.C. to the PTV.

Over voltage test
Preparation:

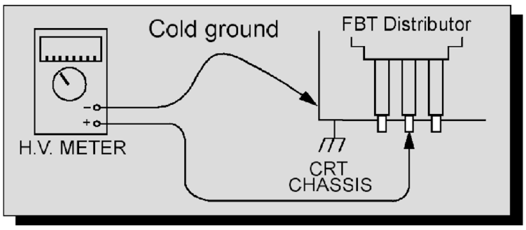
1. Turn PTV "OFF"

2. Connect a NTSC signal generator to the antenna terminal.

3. Connect DVM positive lead to D31 pin 2 and negative lead to D31

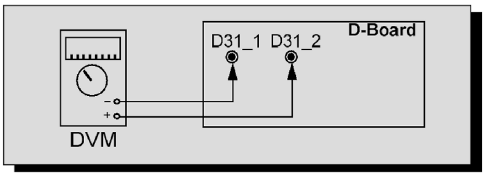
pin 1 on D-Board

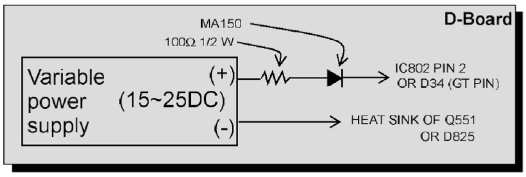
H.V. measurement


Cold ground
FBT Distributor
H.V. METER
CRT
CHASSIS

4. **Connect a H.V. meter (static type, class 0.1) with high voltage leads to high voltage distributor on FBT.**

DVM and power supply connection


D31_1
D31_2
D-Board
DVM


MA150
100Ω 1/2 W
D-Board
Variable power supply
(+)
(15~25DC)
(-)
IC802 PIN 2 OR D34 (GT PIN)
HEAT SINK OF Q551 OR D825

5. **Connect the 15 ~ 25 V DC variable power supply positive lead to D34 or IC802 pin 2 (D Board) and negative lead to heat sink of Q551 or D825**

Procedures:

1. **Apply a NTSC white pattern.**
2. **Turn PTV ON.**
3. **Adjust the picture or brightness controls so that the DVM reads 12.4 ± 0.4 volts.**
4. **Increase the variable power supply until set turns off. The set should turn off at 12.4 ± 0.4 volts (DVM) and high voltage less than 36.4kV.**
5. **If the DVM reading is other than 12.4 ± 0.4 volts, readjust picture or brightness control and repeat steps 3.**
6. **Turn off the variable supply and confirm that the set will turn on by pulling out AC plug socket and connecting it again.**

4. Service notes

NOTE
These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.

Leadless chip component (surface mount)
Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board,however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.
Chip resistor have a three digit numerical resistance code, 1st and 2nd significant digits and a multiplier. Example: 162 = 1600 or 1.6k Ω resistor, 0 = 0 Ω (jumper).
Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.
Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.
Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

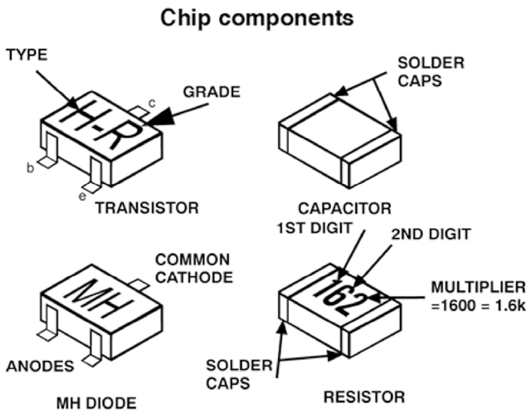
Component removal

1. **Use solder wick to remove solder from component end caps or terminal.**
2. **Without pulling up, carefully twist the component with tweezers to break the adhesive.**
3. **Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.**

Chip component installation

1. **Put a small amount of solder on the board soldering pads.**
2. **Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area**

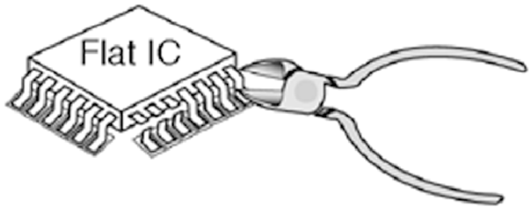
with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.


Chip components

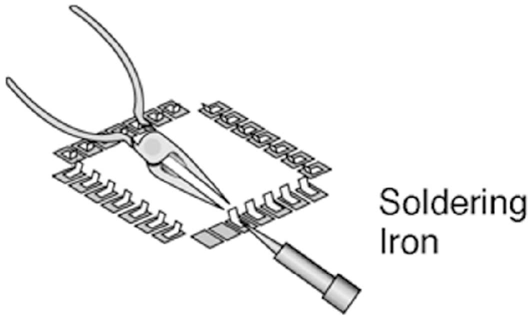
TYPE
GRADE
H-R
c
b
e
TRANSISTOR
SOLDER CAPS
CAPACITOR
1ST DIGIT
2ND DIGIT
162
MULTIPLIER =1600 = 1.6k
COMMON CATHODE
MH
ANODES
MH DIODE
SOLDER CAPS
RESISTOR

How to replace flat ic (required tools)

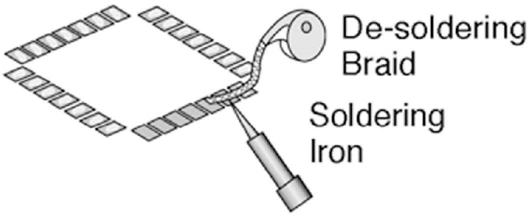
1. **Remove the solder from all of the pins of a Flat IC by using a desolder braid**



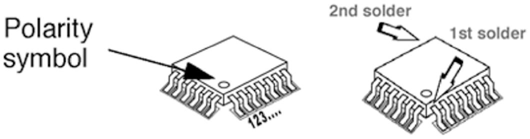
2. **Put the iron wire under the pins of the Flat IC and pull it in the direction indicated while heating the pins using a soldering iron. A small awl can be used instead of the iron wire.**


Soldering Iron

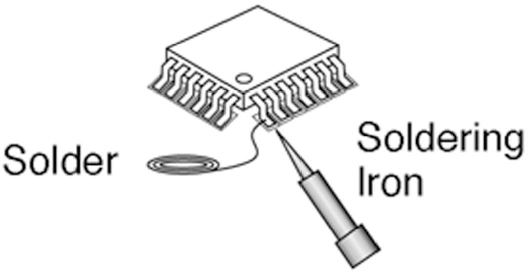
3. **Remove the solder from all the pads of the Flat IC by using a de solder braid**


De-soldering Braid
Soldering Iron

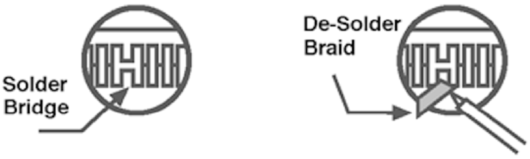
4. **Position the new Flat IC in place (apply the pins of the Flat IC to the soldering pads where the pins need to be soldered). Properly determine the positions of the soldering pads and pins by correctly aligning the polarity symbol**


Polarity symbol
123....
2nd solder
1st solder

5. **Solder all pins to the soldering pads using a fine tipped soldering iron**


Solder
Soldering Iron

6. **Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de solder braid as shown in the figure below**


Solder Bridge
De-Solder Braid

IMPORTANT

To protect against possible damage to the solid state devices due to arcing or static discharge, make certain that all ground wires are securely connected

CAUTION

The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the receiver to avoid damage to the test equipment or to the chassis. Connect the test equipment to the proper ground(HOT or

COLD) when servicing, or incorrect voltages will be measured.

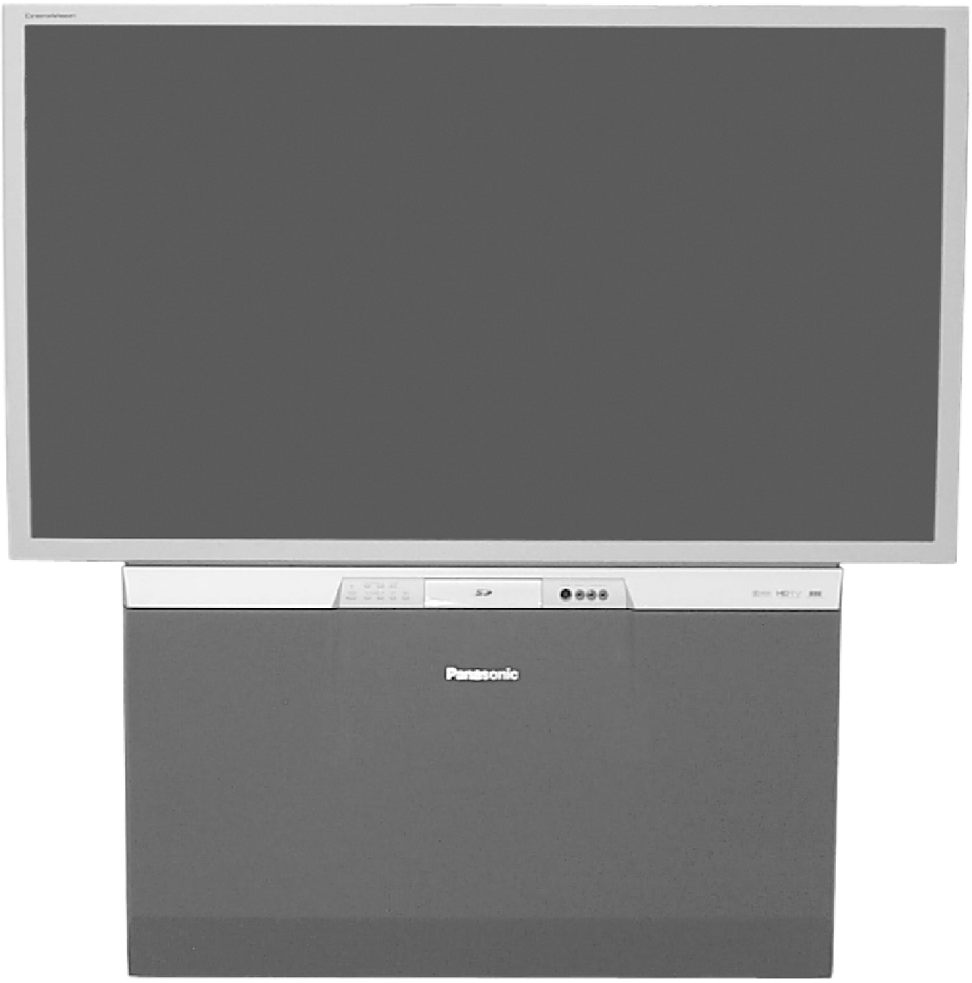
WARNING

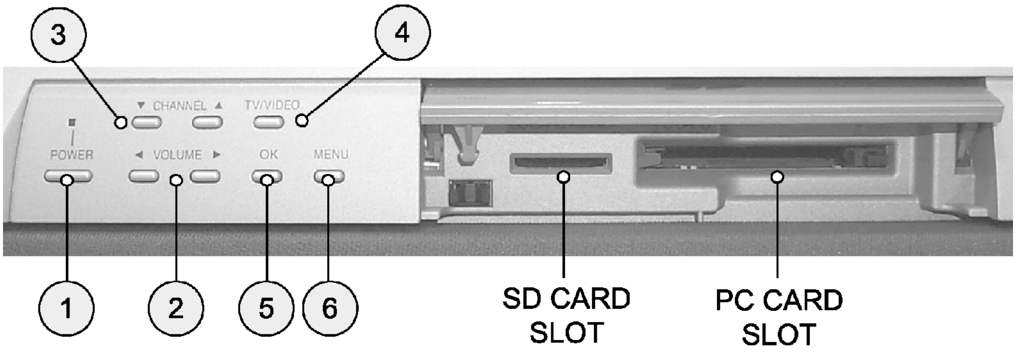
This receiver has been designed to meet or exceed applicable safety and x-ray radiation protection as specified by government agencies and independent testing laboratories.

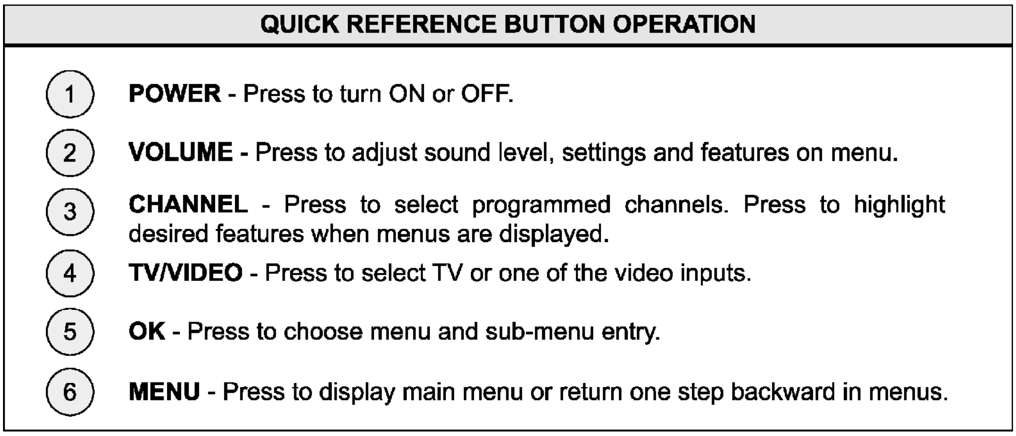
To maintain original product safety design standards relative to x-ray radiation and shock and fire hazard, parts indicated with the symbol ⚠ on the schematic must be replaced with identical parts. Order parts from the manufacturer’sparts center using the parts numbers shown in this service manual, or provide the chassis number and the part reference number.

For optimum performance and reliability, all other parts should be replaced with components of identical specification.

5. PTV Location of controls


Panasonic


3
4
▼ CHANNEL ▲
TV/VIDEO
POWER
◄ VOLUME ►
OK
MENU
1
2
5
6
SD CARD SLOT
PC CARD SLOT



QUICK REFERENCE BUTTON OPERATION

① **POWER** - Press to turn ON or OFF.

② **VOLUME** - Press to adjust sound level, settings and features on menu.

③ **CHANNEL** - Press to select programmed channels. Press to highlight desired features when menus are displayed.

④ **TV/VIDEO** - Press to select TV or one of the video inputs.

⑤ **OK** - Press to choose menu and sub-menu entry.

⑥ **MENU** - Press to display main menu or return one step backward in menus.

6. Receiver feature table

FEATURE/MODEL	PT-47WXD63GPT-53WXD63G
CHASSIS	AP830
MICRO	256K
MENU LANGUAGE	ENGLISH
CLOSED CAPTION	X
V-CHIP (USA/CANADA)	X
CHANNEL INFO BANNER	X
ATSC / QAM TUNING	X
VIDEO INPUT SKIP	SKIP
CHANNEL COUNT	181
PIP (1T), 2T PIP (2T), 2T SPLIT	2T SPLIT
2RF	X
REMOTE CONTROL (W/LIGHT)	EUR7627Z10
CRT SUPPLIER	MDDA (CENTAUR)
SCREEN	W/PROT SCREEN
CHASSIS	P9
COMB FILTER	MOTION ADP, 3D Y/C
HEC/VEC (X=BOTH)	X
NEW YNR	X
VM	X (DIGITAL)
V/A NORM (X=BOTH)	X
COLOR TEMP	X
AIP	X
PRESET/INPUT LABELING	X
VIDEO PICTURE MEMORY	X
DIGITAL SCAN RATE	1080i, 540p
NTSC LINE DOUBLER	540p PROGRESSIVE (NEW)
MTS/SAP/DBX	X
BUILT-IN AUDIO POWER	15Wx2 (10%)
No. OF SPEAKERS	4
BASS/BALANCE/TREBLE CONTROL	X

FEATURE/MODEL	PT-47WXD63GPT-53WXD63G
AI SOUND	X
SURROUND	X
SPATIALIZER/BBE	BBE
A/V IN (REAR/FRONT)	4(3/1)
A/V PROGRAM OUT	X
AUDIO OUT (FAO: F, VAO:V)	F
COMPONENT INPUT (Y, Pb, Pr)	2
S-VIDEO INPUT (REAR/FRONT)	2/1
HDMI/HDCP INPUT	1
DIGITAL AUDIO OUT (AC-3/PCM)	1
CableCARD SLOT	1(BACK)
(PCMCIA/SD)	1(FRONT)

Note:
Specifications are subject to change without notice or obligation.

7. Board description table

BOARD	PART NUMBER	DESCRIPTION
A-BOARD	TNP2AH051	MAIN CHASSIS
D-BOARD	TNP2AH056	POWER SUPPLY
* DC-BOARD	TNP2AA151	CONVERGENCE CIRCUIT
* DG-BOARD	TNP2AA132	MPU, VIDEO SIGNAL PROCESSIN
* DV-BOARD	TNP2AA133	HDMI DECODER
* DT-BOARD	TNP2AA144	HIGH DEFINITION TUNER
G-BOARD	TNP2AA150	FRONT A/V INPUT
H-BOARD	TNP2AA134	REAR A/V INPUTS
K-BOARD	TNP2AA149	KEYBOARD PANEL
* JG-BOARD	TNP2AA140	SD,PC JPEG VIEWER
LB-BOARD	TNP2AA147AB	BLUE PRT
LG-BOARD	TNP2AA146AB	GREEN PRT
LR-BOARD	TNP2AA145AB	RED PRT
R-BOARD	TNPA0615AB	IR SENSOR
T-BOARD	TNP2AA136	SUB-POWER

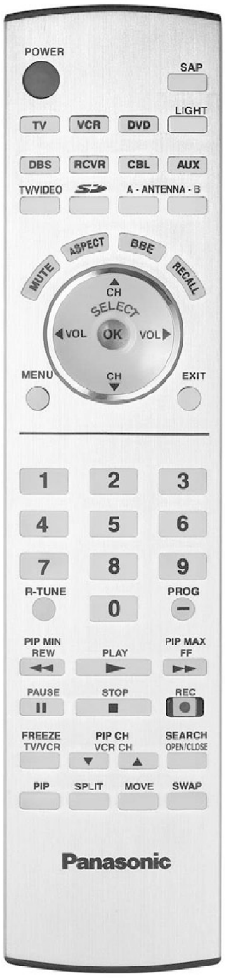
NOTE
When ordering a replacement board assembly, append an “S” to the board number

EXAMPLE
To order the A Board, the replacement board is TNP2AH051S

*

DC-Board, DG-Board, DV-Board, DT-Board and JG-Board are non-serviceable boards, except for the connectors JG1, JG2, JK5001, JK5002, JK8002 and JK8003. If any of these boards are defective, replace it with a new one.

8. Location of controls (EUR7627Z10 remote)


POWER
SAP
LIGHT
TV
VCR
DVD
DBS
RCVR
CBL
AUX
TV/VIDEO
A - ANTENNA - B
ASPECT
BBE
MUTE
RECALL
CH
SELECT
VOL
OK
VOL
MENU
CH
EXIT
1
2
3
4
5
6
7
8
9
R-TUNE
0
PROG
PIP MIN
REW
PLAY
PIP MAX
FF
PAUSE
STOP
REC
FREEZE
TV/VCR
PIP CH
VCR CH
SEARCH
OPEN/CLOSE
PIP
SPLIT
MOVE
SWAP
Panasonic

POWER
Press to turn ON and OFF.

TV - VCR - DVD - DBS - RCVR
Press to select a component.

TV/VIDEO
Press to select TV or Video mode.

SD
Press to acces the JPEG viewer menu.

MUTE
Press to mute sound.

ASPECT
Press to change the aspect ratio of image.

MENU
Press to acces the menu.

KEYBOARD
Press to select any channel.

R-TUNE
Press to switch to previously viewed channel or video mode.

COMPONENT - PIP - SEARCH
Press to control the component functions. Press to access the PIP and search functions.

SAP
Press to acces the secondary audio program broadcast.

LIGHT
Press to iluminate the keypad.

A & B ANTENNA
Press to select between antenna A or B inputs.

RECALL
Press to display time, channel sleep timer and other options.

BBE
Press to turn BBE sound ON or OFF.

OK
Press to select an adjustment or option.

VOL
Press to adjust TV sound and navigate in menus.

CH
Press to select next or previous channel and navigate in menus.

EXIT
Press to exit adjustments or menus.

Note:
For additional information for this remote please refer to the owner’s manual section remote operation, listed on the parts list section.

9. Auto diagnosis feature

This receiver incorporates a self diagnosis feature. With this feature it will be easier for the

technician to detect failures. There is a LED located by the keyboard on the front panel, this LED will start flashing when SOS is detected by the circuits locatedin specific areas, depending on how many times the LED is flashing, this will indicate what circuit should be checked. Make a count of flashing and see the table shown below. Please use this feature effectively especially for intermittent problems.

NUMBER OF FLASHES	POSSIBLE CAUSE
1	POWER SUPPLY AND/OR VERTICAL
2	IC1006 (DG-BOARD)
3	CONVERGENCE (DC-BOARD)
4	HHS (FLYBACK)
5	GC2M (DG-BOARD)
6	GC2S (DG-BOARD)
7	GC2V (DG-BOARD)
8	FAN

10. EEPROM copy jig

This PTV has a feature that allows to clone convergence from main EEPROM data adjustments from a PTV to other by connecting a jig to the PTV set, or can be used to back-up data before making adjustments. A jig part number TXFJIG01SER, is availablethrough Matsushita/Panasonic Services.

Preparation:
To connect this jig, remove the lower back cover as instructed on disassembly for service section on this service manual and insert the jig into A10 connector located on A-Board. (See figure)

Procedure to copy data:

1. **Enter to service mode and display service menu (see page 23).**
2. **Select “AREA” DAC and then press OK button on remote to enter. Press VOL right/left to select one of the following options then press OK:**
    - **Select ALL to copy all main EEPROM data**
    - **Select ADJ to copy only adjustment data.**
    - **Select FIX to copy only fix data**
3. **To copy data from main EEPROM to jig, select “IN → EX” DAC and press OK button on remote.**
4. **To copy data from jig to main EEPROM, select “EX → IN” DAC and**

press OK button on remote.

Procedure to copy convergence:

1. **Enter to service mode and display service menu**
2. **Select “FINE” DAC and press OK on remote.**
3. **Press “8” on remote.**
4. **Select from and then press OK on remote:**

   - INT to copy data from internal EEPROM to jig
   - EXT to copy from jig to internal EEPROM.

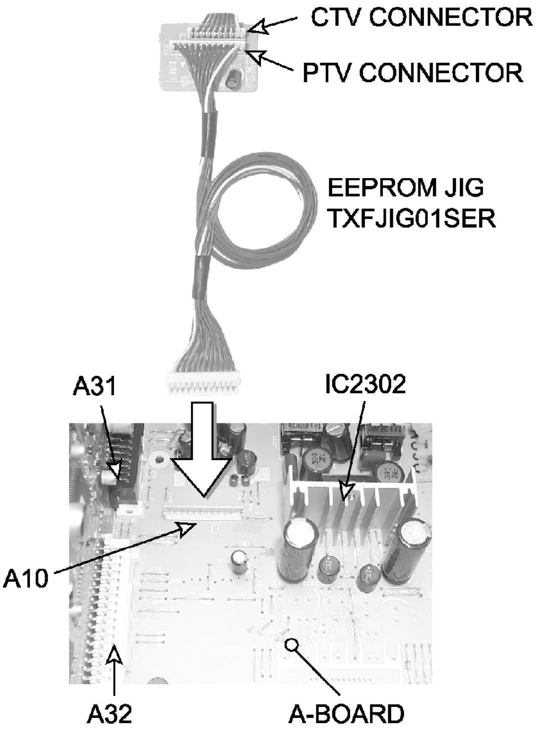
5. **Select an option from the menu with CH keys and confirm with OK:**

   - DEFAULT:default factory preset
   - CURRENT:to copy the current (receiver data or jig data) convergence adjustments to memory.
   - NOT USE: to back up data.
   - ALL: to copy all data.

   NOTE:
   The stated as default factory preset contain the factory DATA; Use this option when data was lost or when adjustment is lost completely.

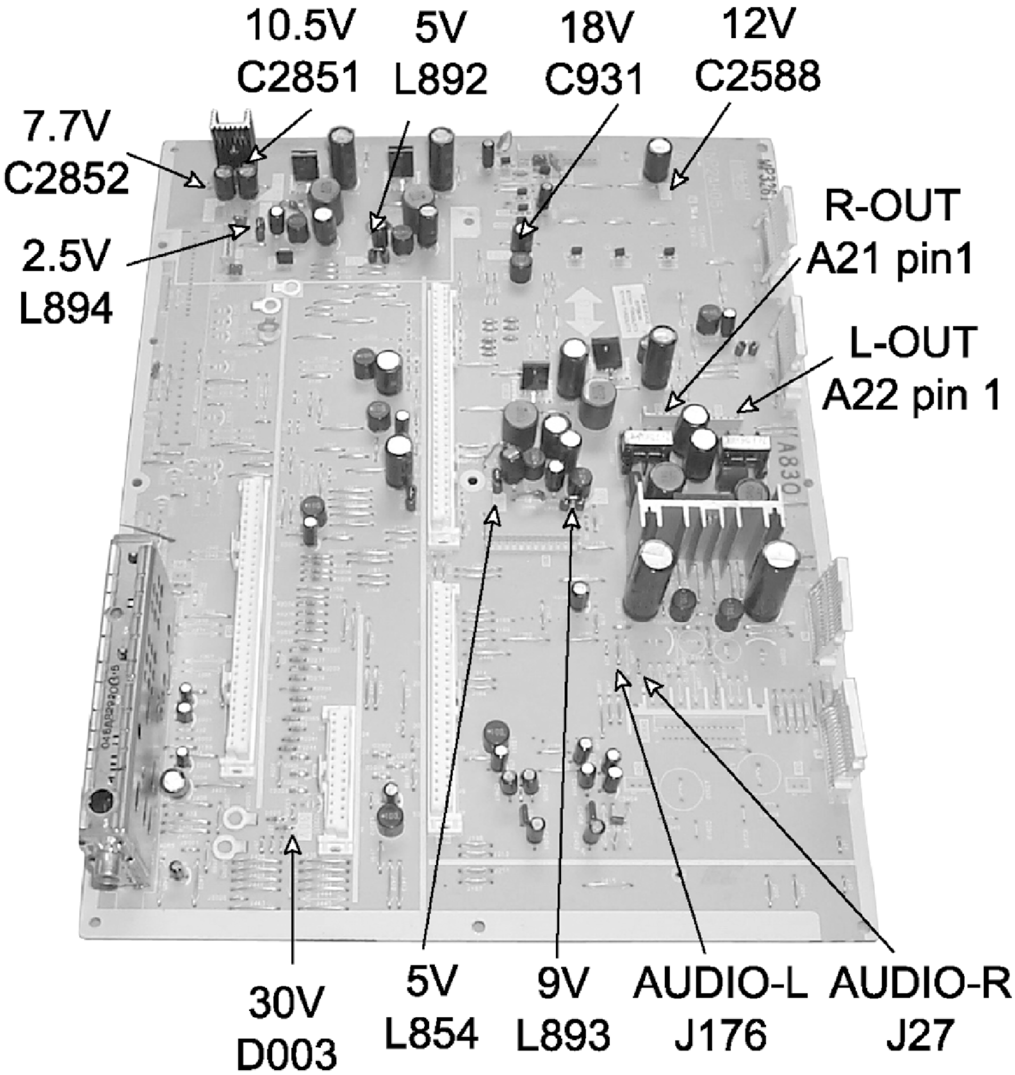
6. **Select destination to copy (INT or EXT) and confirm with OK.**
7. **Once an option is selected the copy process begins.**
8. **Once finished, the receiver shuts down for a moment to reinitialize.**
9. **Remove the copy jig from A10.**

EEPROM copy jig connection


CTV CONNECTOR
PTV CONNECTOR
EEPROM JIG
TXFJIG01SER
A31
IC2302
A10
A32
A-BOARD

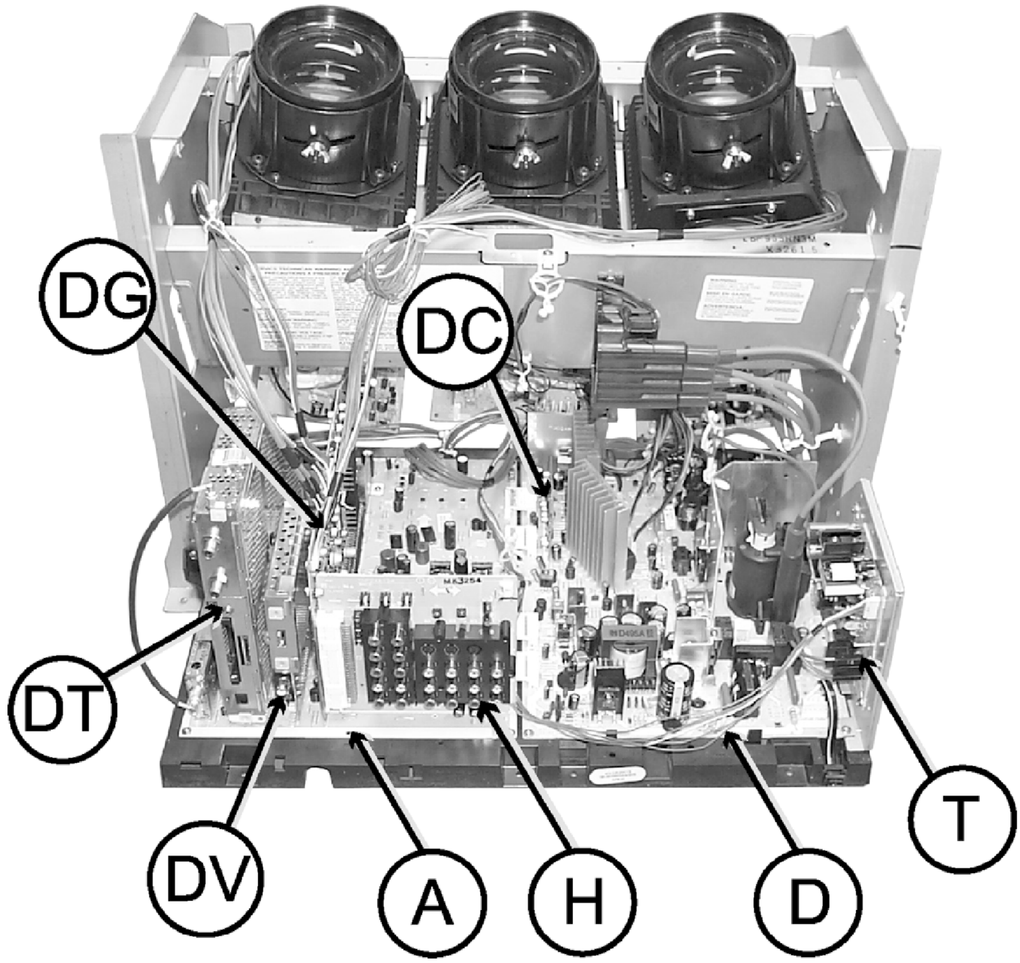
11. A-Board check points

A-Board check points

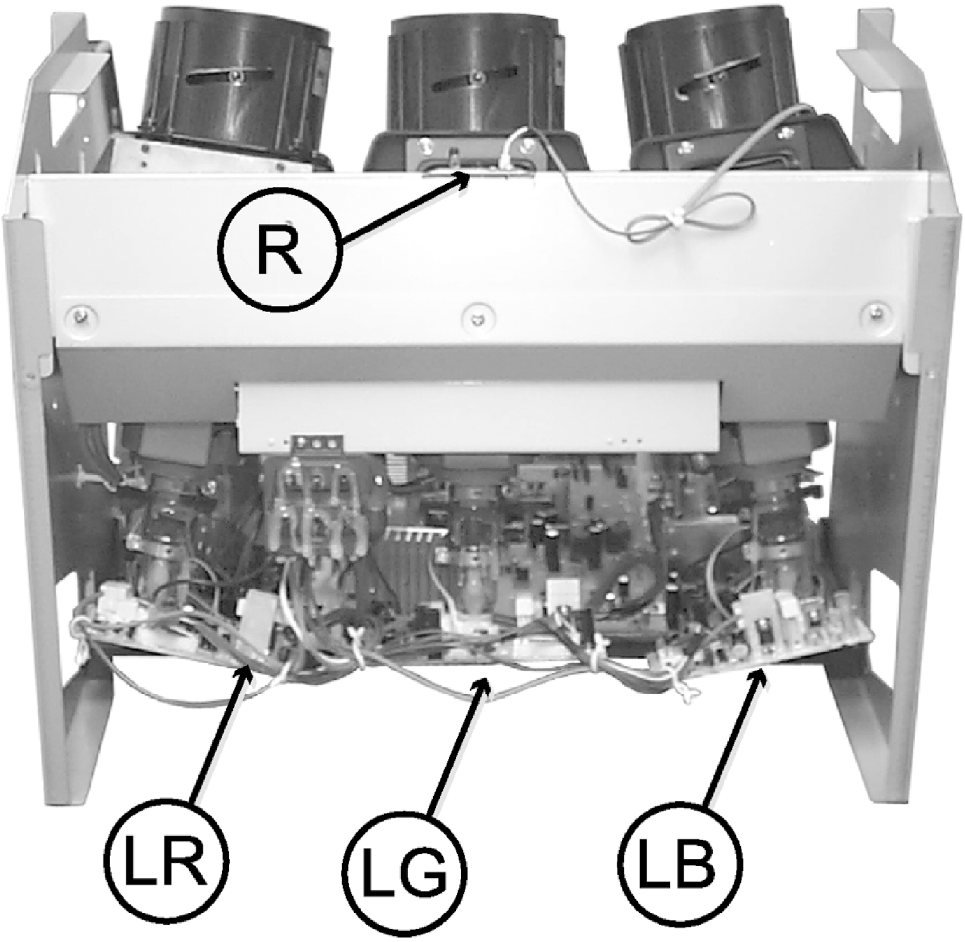

10.5V
C2851
5V
L892
18V
C931
12V
C2588
7.7V
C2852
2.5V
L894
R-OUT
A21 pin1
L-OUT
A22 pin 1
30V
D003
5V
L854
9V
L893
AUDIO-L
J176
AUDIO-R
J27

12. Chassis & boards layout (location of main components)

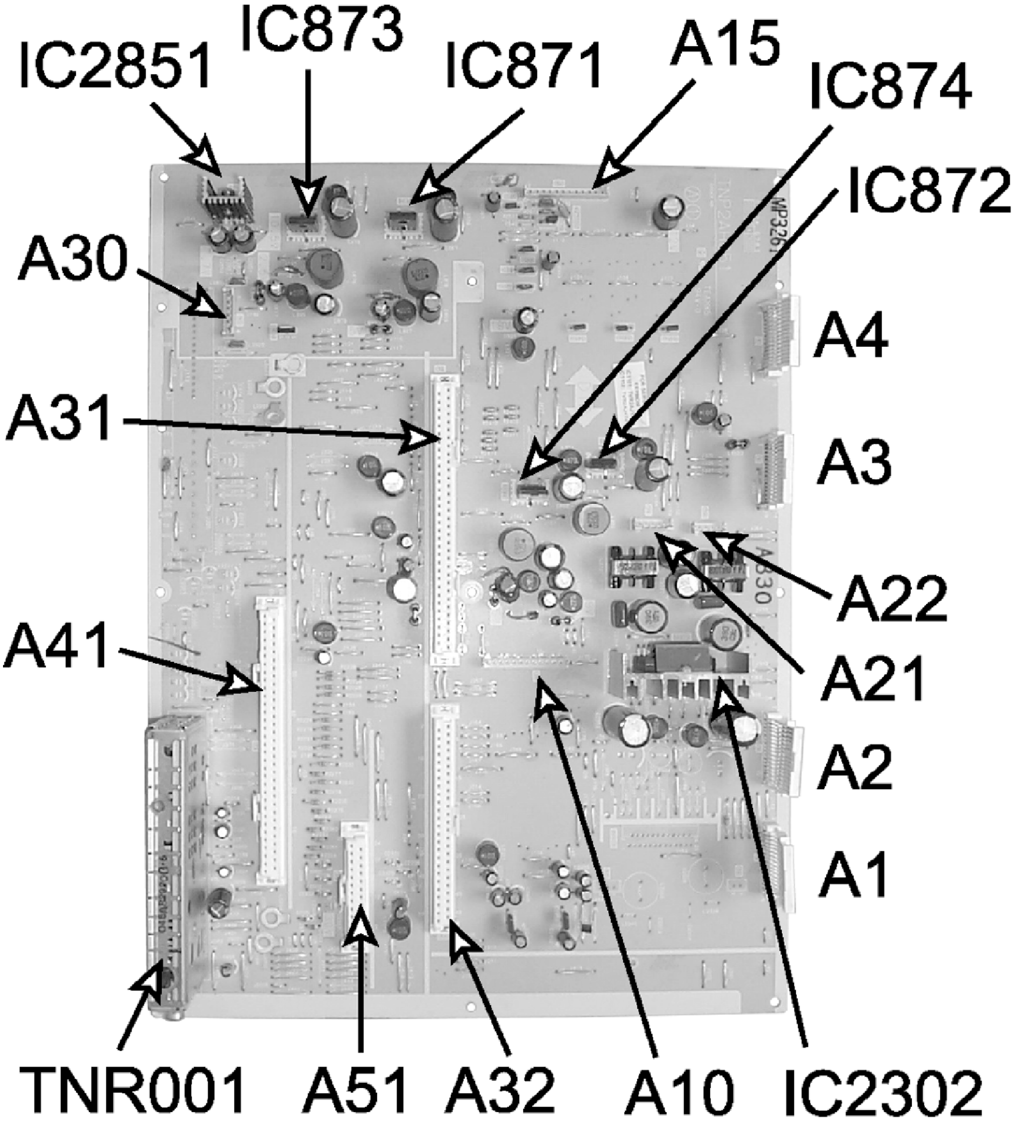
Chassis and boards layout


DG
DC
DT
DV
A
H
D
T

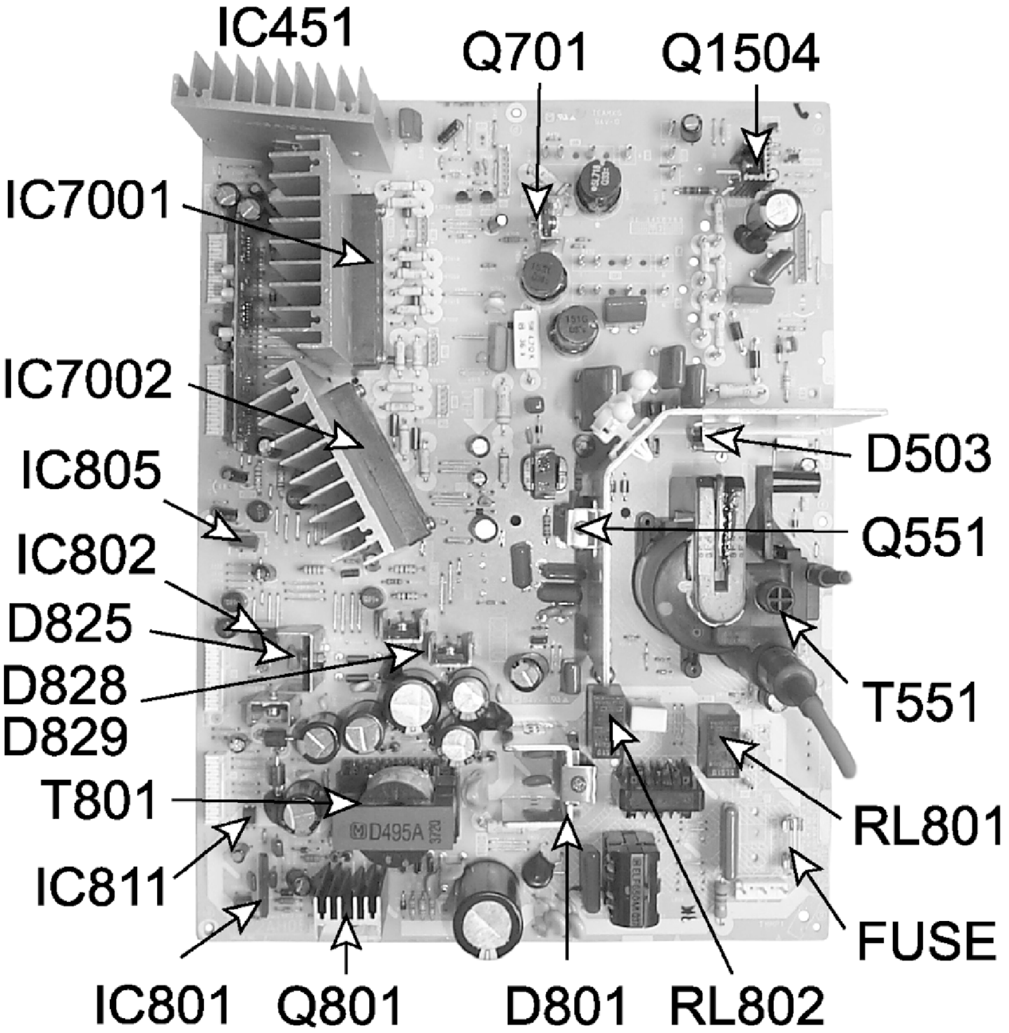
Chassis and boards (FRONT)



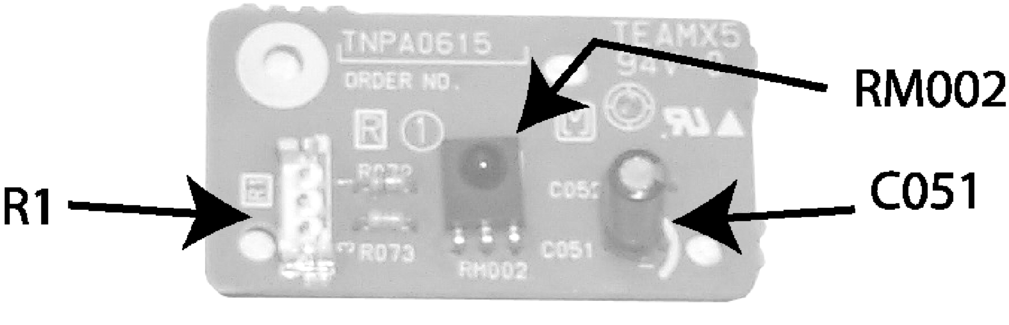
A-BOARD


IC2851
IC873
IC871
A15
IC874
IC872
A30
A4
A31
A3
A22
A41
A21
A2
A1
TNR001
A51
A32
A10
IC2302

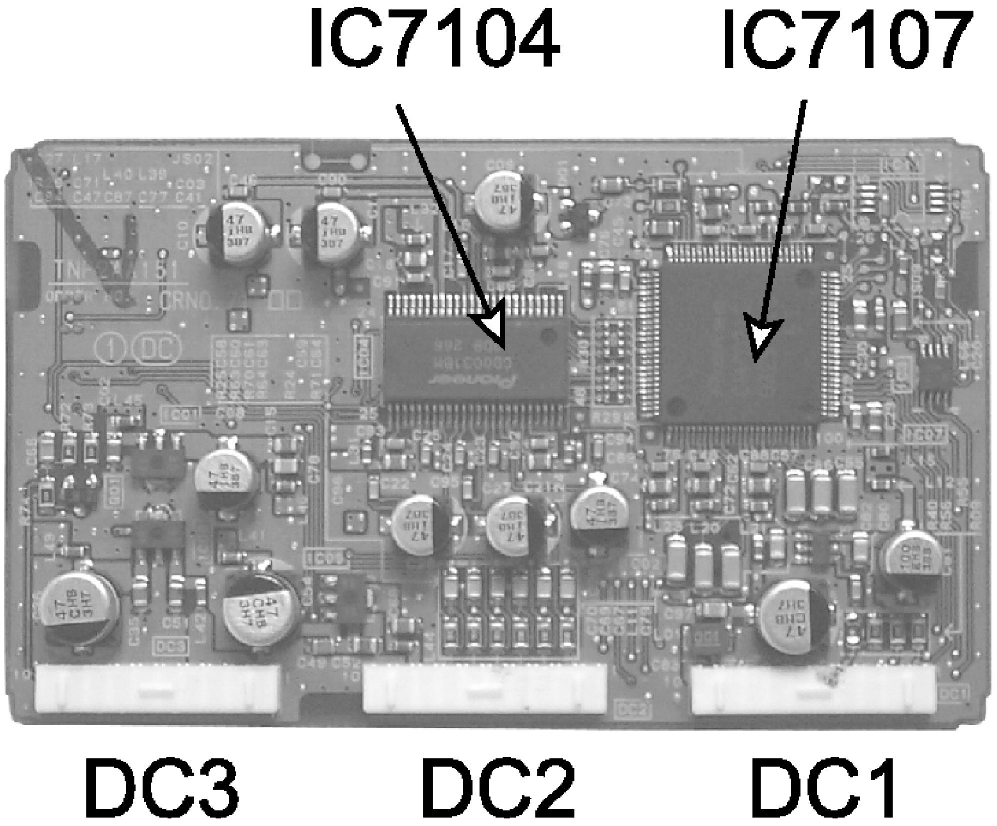
D-BOARD


IC451
Q701
Q1504
IC7001
IC7002
D503
IC805
Q551
IC802
D825
D828
D829
T551
T801
RL801
IC811
FUSE
IC801
Q801
D801
RL802
D495A

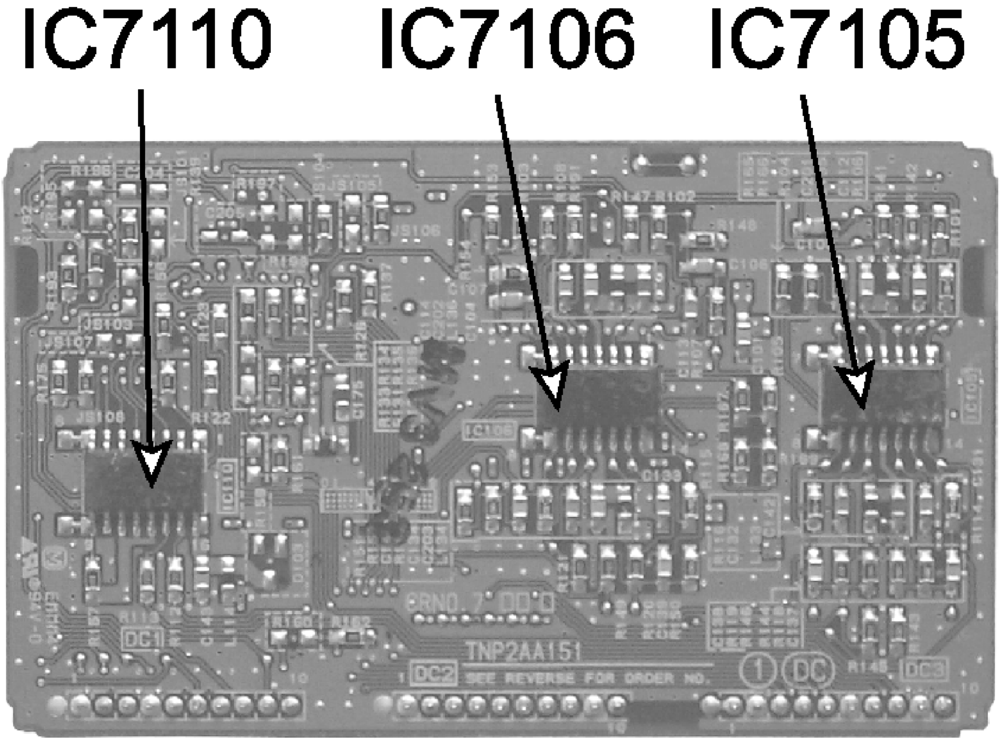
R-BOARD


RM002
R1
C051
TNPA0615
ORDER NO.
R072
R073
C052
C051
RM002
TEAMX5
94V-0

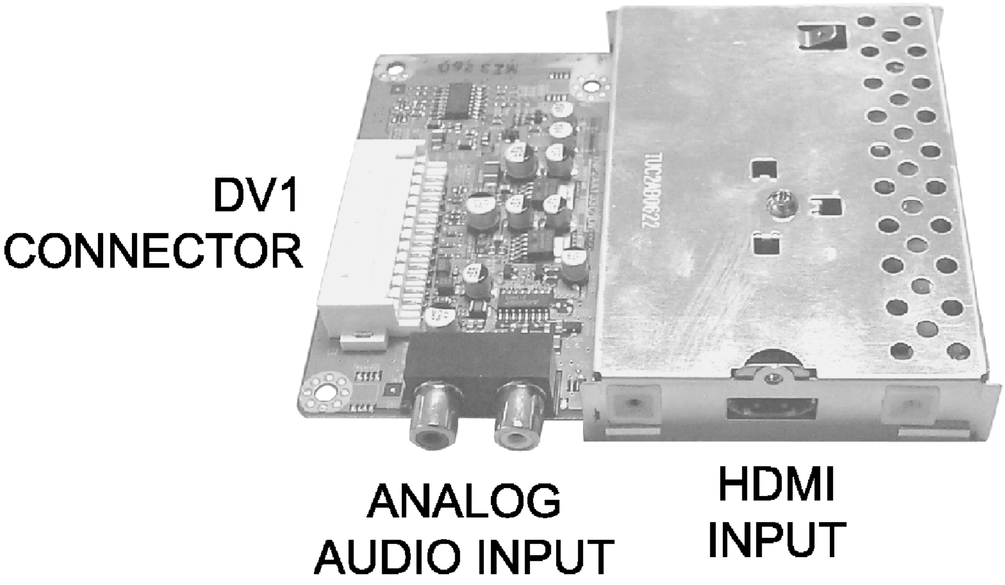
DC-BOARD (TOP)


IC7104
IC7107
DC3
DC2
DC1

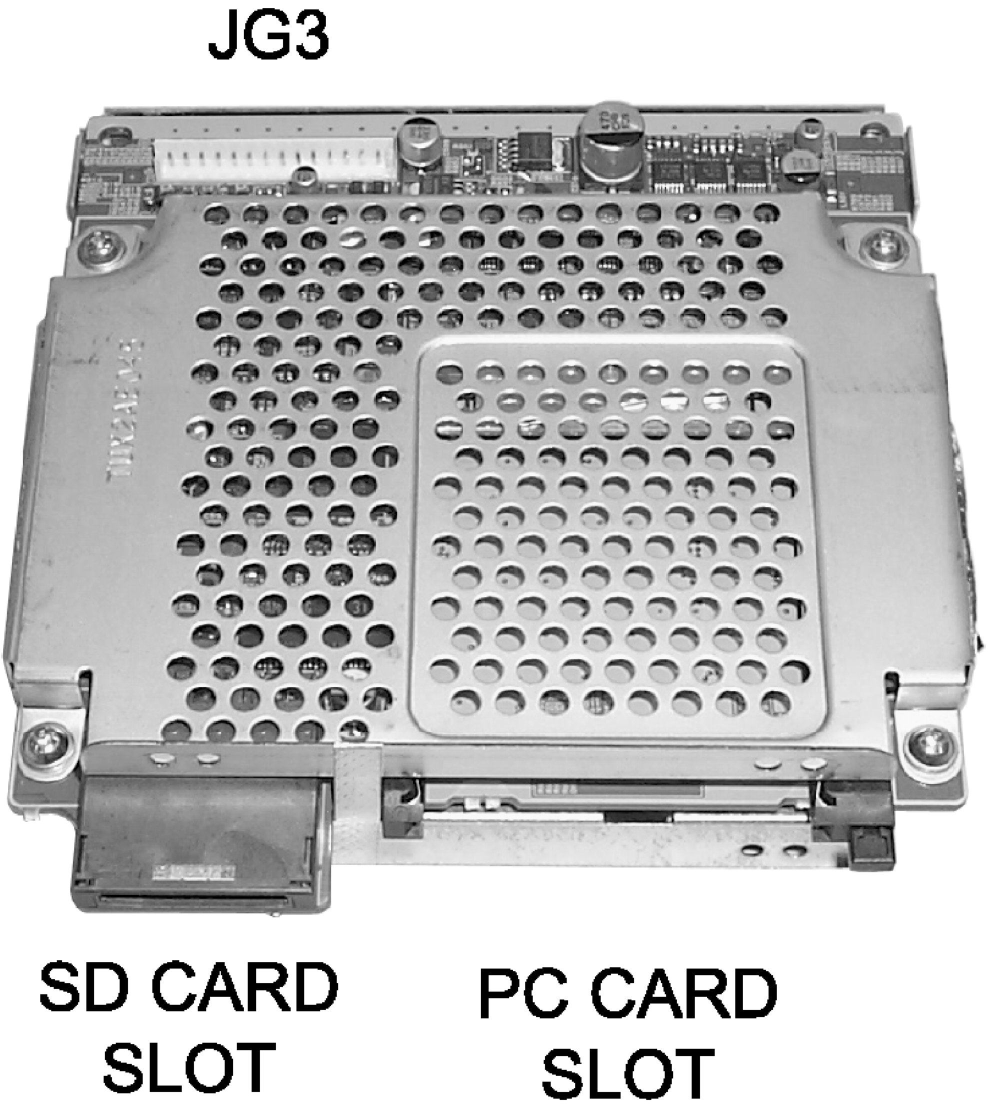
DC-BOARD (BOTTOM)


IC7110
IC7106
IC7105
TNP2AA151
SEE REVERSE FOR ORDER NO.

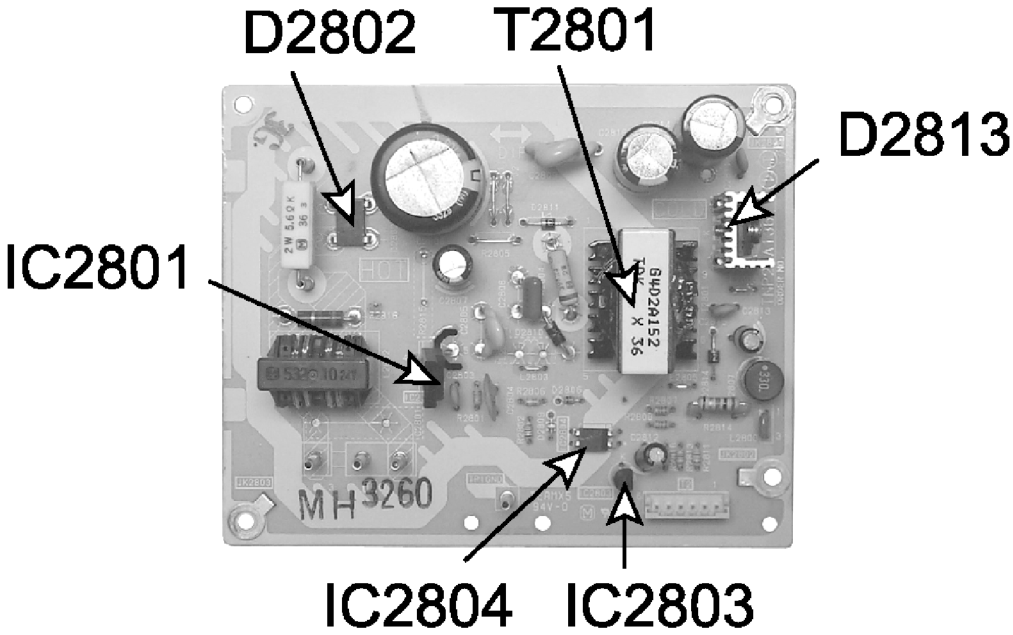
DV-BOARD


DV1
CONNECTOR
ANALOG
AUDIO INPUT
HDMI
INPUT

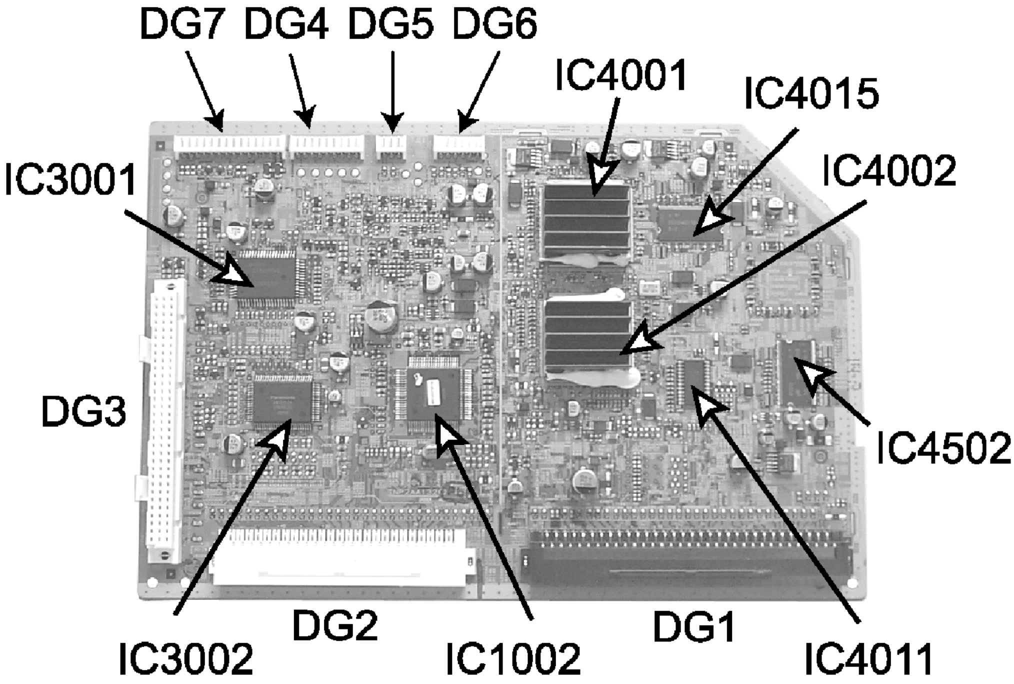
JG-BOARD


JG3
SD CARD SLOT
PC CARD SLOT

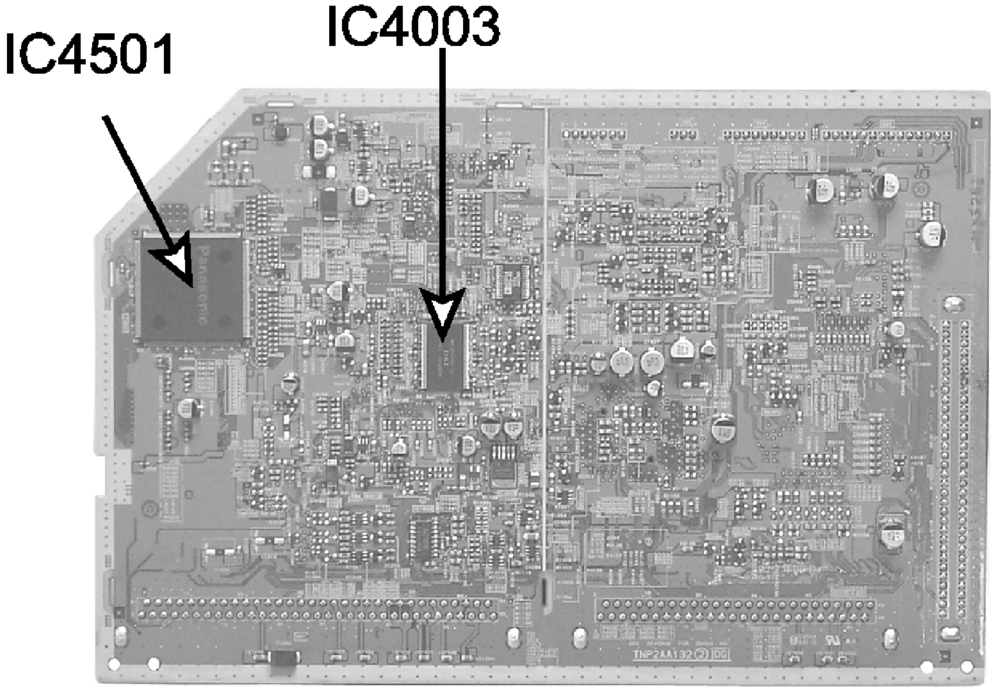
T-BOARD


D2802
T2801
D2813
IC2801
IC2804
IC2803

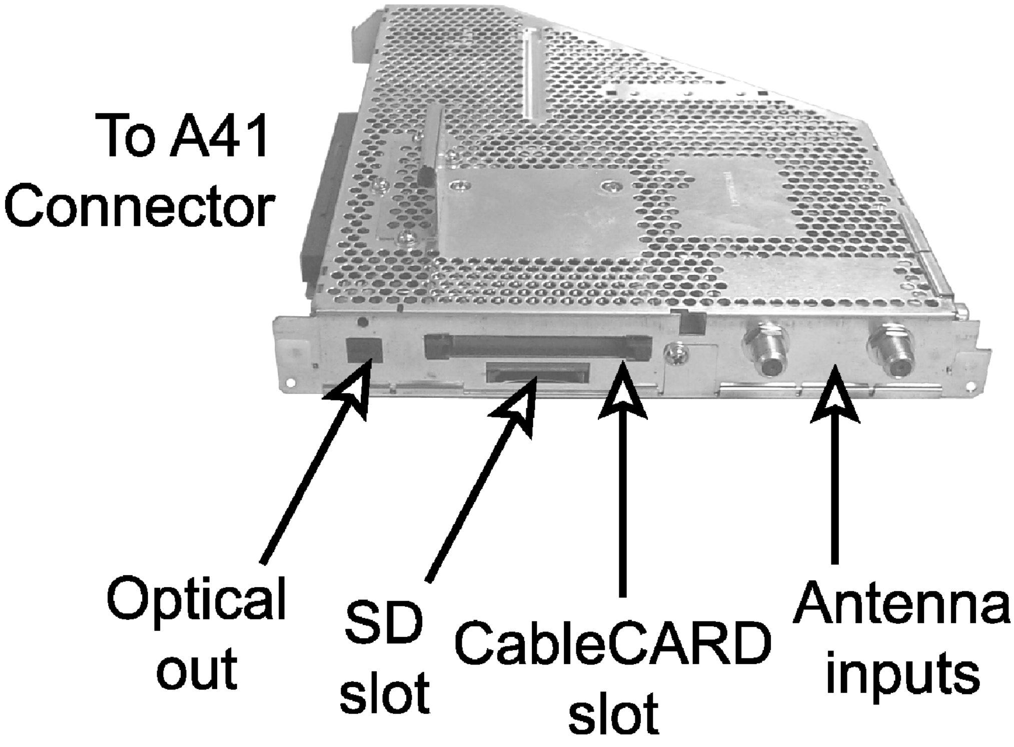
DG-BOARD (TOP)


DG7
DG4
DG5
DG6
IC4001
IC4015
IC3001
IC4002
DG3
IC4502
IC3002
DG2
IC1002
DG1
IC4011

DG-BOARD (BOTTOM)


IC4501
IC4003

DT-BOARD


To A41 Connector
Optical out
SD slot
CableCARD slot
Antenna inputs

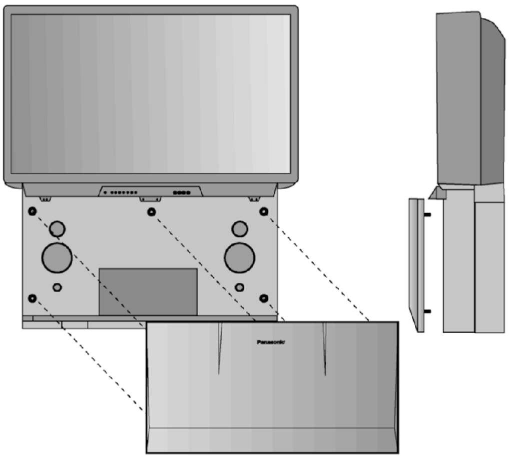
13. Disassembly for service

NOTE:
Board ground wires may have to be disconnected to disassemble some boards. All ground wires must be reconnected using jumper leads, if necessary, before power is applied to PTV for service.

Speaker grille removal

Speaker grille, is secured to the cabinet of the PTV with 5 grommet holders. Grip panel from the sides and middle upper part, and gently pull forward to remove. When reassembling, make certain to firmly press on the panel where the insertion points(5) are located, one at each corner and one at the middle top edge.

Speaker grille removal



Keyboard, JPEG viewer and front A/V inputs removal

1. **Remove the speaker grille.**
2. **Unplug the connectors from the keyboard and front A/V inputs assemblies. Remove the screws (3) affixing the keyboard and front A/V inputs to the control panel and tilt the front panel assembly upward and release it from thefront cabinet carefully and disconnect the JPEG viewer connector.**

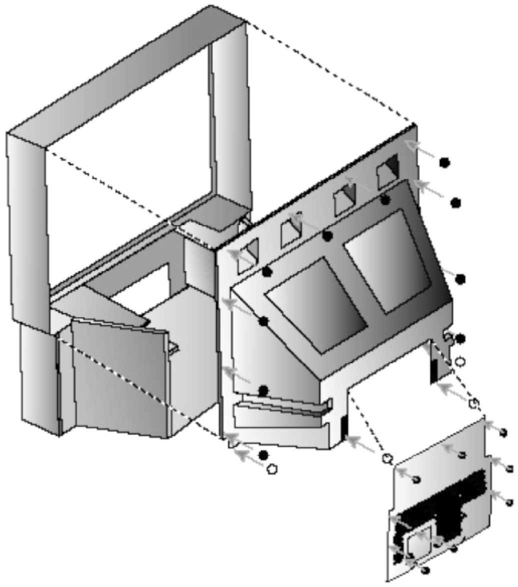
Speakers replacement

1. **Remove the speaker grille.**
2. **Each speaker is secured to the cabinet with 2 screws (Top speaker) and 4 screws (Bottom speaker).**
3. **Disconnect the R and L speaker lead connectors from the speaker units.**

Back lower cover removal

1. **Remove (7) hex screws around the perimeter, marked with arrows. See figure for screws location.**
2. **Remove (9) screws from around the A/V terminal board (marked with arrows).**

Back lower cabinet removal



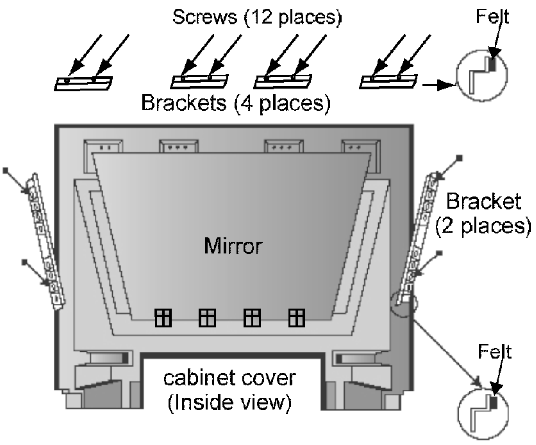
Back cabinet removal

1. **Remove the back lower cover. (Detailed previously).**
2. **The top back cover (plastic shell) is secured with (14) screws around its perimeter. See figure for screws location.**
3. **Be careful not to damage the mirror secured to the underside of the back cover.**

Mirror removal

The mirror is attached inside the cabinet cover. Carefully remove the cabinet cover to access its interior surface and remove the screws securing the brackets that hold the mirror at the top and sides to the mirror.

Mirror removal


Screws (12 places)
Felt
Brackets (4 places)
Bracket
(2 places)
Mirror
Felt
cabinet cover
(Inside view)

Screen frame removal

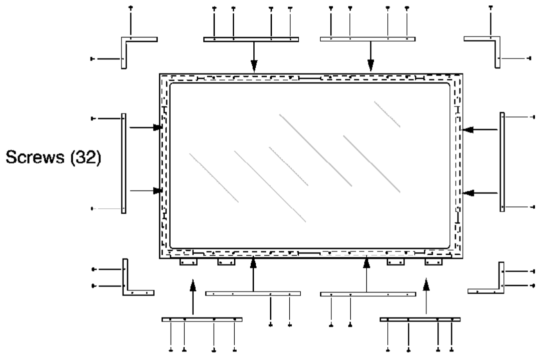
1. **Remove the speaker grille. Disconnect the cables leading to the keyboard, JPEG viewer and the A/V panels and remove the keyboard and AV panel assembly. The assembly is secured by three (3) screws.**
2. **At this point the front cover is held only by four screws, be careful not to push the cabinet forward.**
3. **Remove screws and tilt the assembly forward while lifting it out of place.**

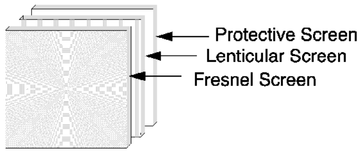
Screen assembly

1. **Remove the screen frame. See screen frame removal procedure above.**
2. **Place screen frame face down on a soft surface.**
3. **Remove all screen brackets and corner brackets**

Note:
The brackets are painted black (permanent marker) on the edge to prevent reflection on image.

Screen assembly





4. **Remove the horizontal barrier panel at the back of the cabinet.**
5. **Unplug cables connectors (K1, JG3, G1 and speaker connectors) and pull out the main chassis block.**

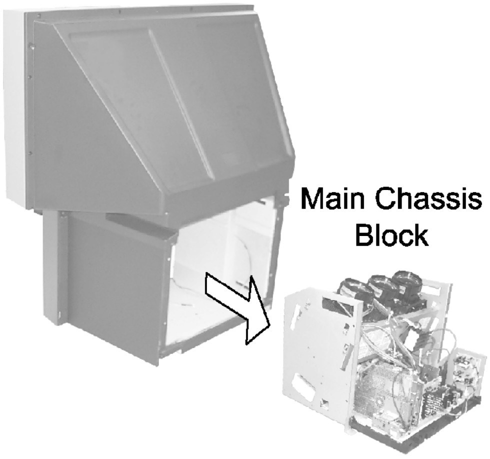
Note:

Main chassis block can be serviced either in normal position or laying on its back (protect hookup terminal from damage).

Main chassis block

1. **Remove the speaker grille.**
2. **Remove the back lower cabinet cover.**
3. **The main chassis block is secured to the cabinet by 2 screws at front, behind the Speaker Grill and 3 screws inside on the bottom of the optical frame).**
4. **Remove the horizontal barrier panel at the back of the cabinet.**
5. **Unplug cables (K1, G1, JG3 and speaker connectors) and pull out the main chassis block.**

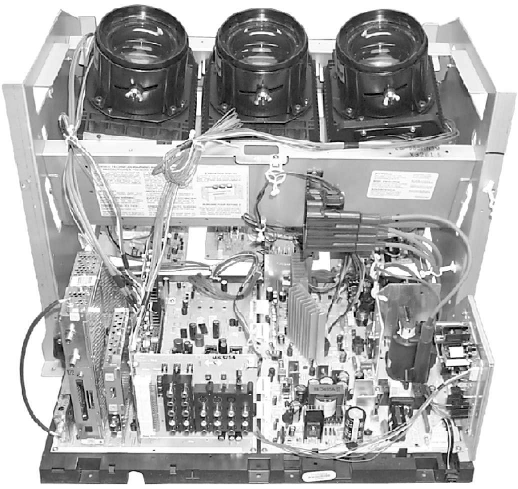
Chassis removal



13.1. Chassis assembly

The chassis assembly shown in figure includes all the electrical and optical (light box) components

Chassis back view



A/V BACK COVER ASSEMBLY

This assembly is secured to H-Board by 8 screws. Be sure to disconnect the fan cable from H-board.

H-Board

1. H-Board is connected to DG-board with H1 connector.

2. Pull carefully to the right to disconnect.

DT-Board

1. This board has a metal frame holder that is fastened to A-Board with 2 screws. This metal frame must be removed first before trying pulling up DT-board, otherwise it can be damaged.
2. This board has grommet squares, be careful to do not screw too tight, otherwise the grommet screw hole will get stripped.
3. After removing the metal frame pull up carefully from A41 connector in A-Board.

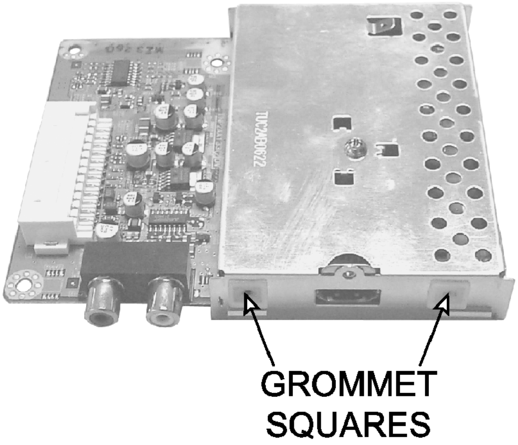
NOTE:
This board is non-serviceable. Except for JK8002 and JK8003. / When removing this board pull carefully.

DV-Board

1. Plugs onto A-Board at the A51 connector.

NOTE:
This board is non-serviceable. / When removing this board pull carefully.

2. This board has two Grommet squares, be careful to do not screw too tight, otherwise this grommet screw hole will get stripped.



NOTE:
This board is non-serviceable. Except for JK5002 (ANALOG AUDIO JACKS) and JK5001 (DV1 connector) / When removing this board pull carefully.

DG-Board

1. Plugs onto A-Board at A31 and A32 connectors (DG1 and DG2 respectively).
2. Remove plug cables from connectors DG4, DG5, DG6 and DG7.

NOTE:
This board is non-serviceable. / When removing this board pull carefully.

A-Board

1. A-Board is secured to the chassis tray with six screws.
2. The A-Board is mated to D-Board by four flexible connectors (male side of connectors): A1, A2, A3 & A4. To remove this board, unplug the connectors of A-Board pulling from the sides of each connector.

NOTE:
Some tie wraps that secure the wire dressings may need to be unfastened for chassis removal.

3. Remove plug connector in A30 that goes to T-Board (T2).
4. Remove plug connector in A15 that goes to LG-Board (LG1).

T-Board

1. T-Board is secured to a metal frame by 4 screws. This metal frame is fastened with 2 screws in D-Board and with 1 screw from the main chassis metal frame.
2. Disconnect T2 connector that goes to A-Board (A30).
3. Disconnect T1 plug connector that goes to D-Board (D10).

NOTE:
Some tie-wraps that secure the wire dressings may need to be unfastened for chassis removal.

D-Board

1. **D-Board is secured to the chassis tray with five screws.**
2. **The D-Board is mated to the A-Board by four connectors (female side of connectors): D1, D2, D3 & D4. To remove this board, unplug the connectors on the A-Board pulling from the sides of each connector.**

NOTE:
Some tie-wraps that secure the wire dressings may need to be unfastened for chassis removal.

DC-Board

1. **Plugs onto the D-Board at the D21, D22 and D23 (DC1, DC2 and DC3 respectively) connectors.**

NOTE:
This board is non-serviceable. / When removing this board pull carefully.

JG-Board

1. **This board is fastened by 4 screws to the front panel.**

NOTE:
This board is non-serviceable except for the JG1 and JG2 connectors. / Remove this board carefully.

R-Board

1. **This board is secured to the upper front side of the light box by one screw, and plugged to R1 connector from DG5 on DG-Board.**

LR, LG and LB Board

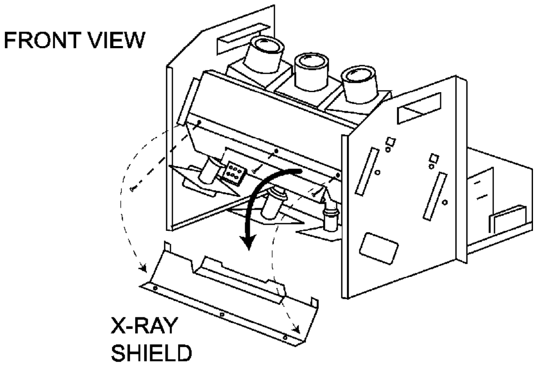
1. Each board is plugged into the socket on the PRT neck, LR-Board on red PRT, LG-Board on green PRT and LB-Board on blue PRT.

13.2. Disassembly for CRT replacement

To facilitate CRT replacement, the complete CRT mounting chassis does not need to be removed.

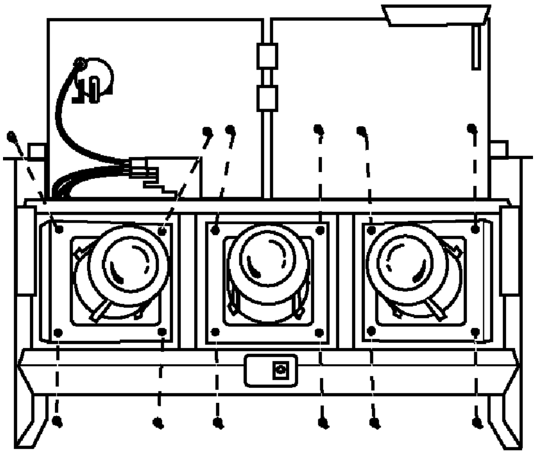
1. Remove the main chassis block from the cabinet.
2. Remove the optical bracket metal cover (front side x-ray shield) by removing 3 screws on top.

CRT replacement

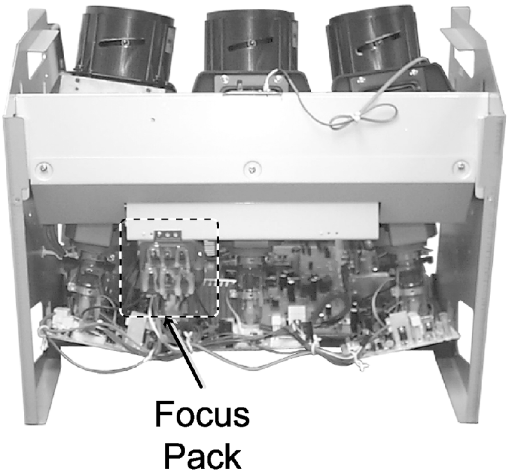


3. Remove the defective CRT anode lead from the high voltage distributor block that is mounted on the flyback transformer. Discharge to CRT chassis.
4. Unplug connectors from D-Board. See board layout. D14 for red, D15 for green and D16 for blue
5. Unplug the defective CRT black DAG ground connector from the CRT Board.
6. Remove the CRT Board from the defective CRT neck.
7. Remove (4) screws from the defective CRT housing.
   Caution:
   Do not remove the (4) CRT lens screws. Support the CRT assembly when loosening screws.

CRT replacement



Focus pack location



8. **Release CRT anode lead from CRT chassis wire clamp and all other wires from holders.**
9. **Loosen a screw that secures the DY and remove it from the CRT neck.**

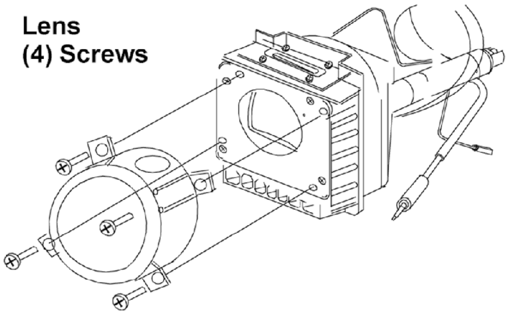
   Caution:

   To insure protection against x-ray radiation, the lens must be mounted in place at all times when power is applied to the PTV

CRT replacement

1. **Remove CRT focus lens assembly (4 screws)**

CRT assembly

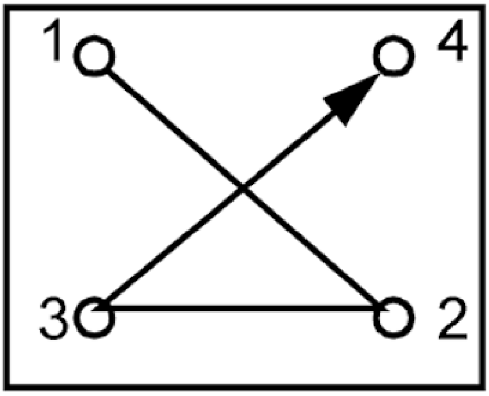


2. Lay CRT face down on a soft cloth.
3. Note position of yoke with centering tabs and remove from defective CRT.
4. Remove CRT DAG ground from defective CRT. Mount it on the replacement CRT exactly as it was on the defective CRT.

Note:
Replacement CRT is supplied with H.V. anode lead attached.

5. Wire the anode lead wire.
6. Install yoke with other CRT neck assemblies on CRT neck in the same order and position as removed from the defective CRT.
7. Press yoke against bell of CRT and tighten the clamp just snug enough so it will not easily shift.
8. Assemble CRT focus lens assembly to new CRT with (4) screws. Make sure focus lens adjustment nut is in the same location as on other CRT focus lens

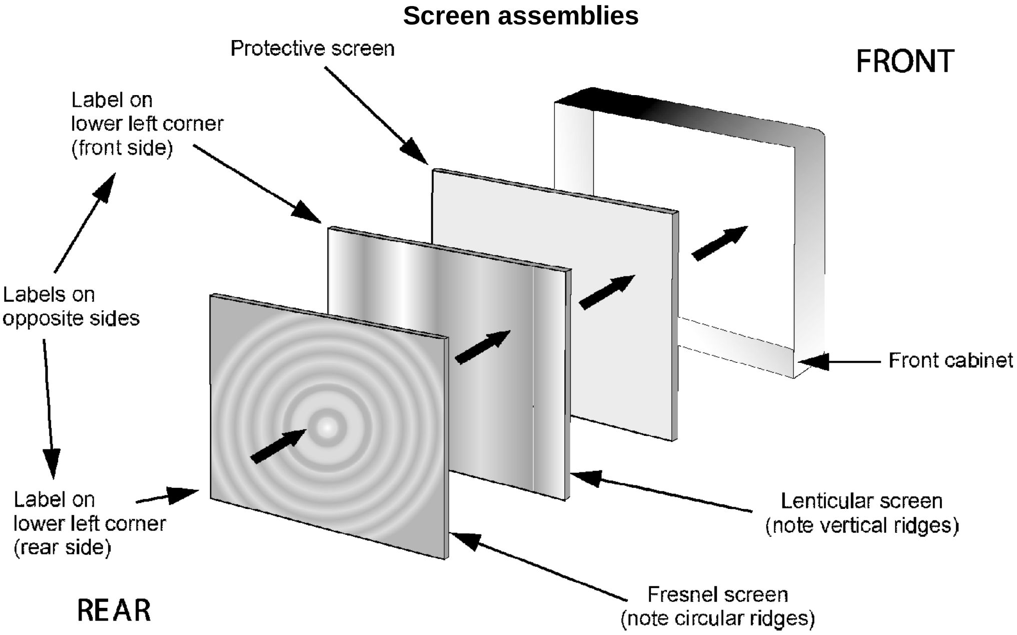
CRT screw tightening order



Note:

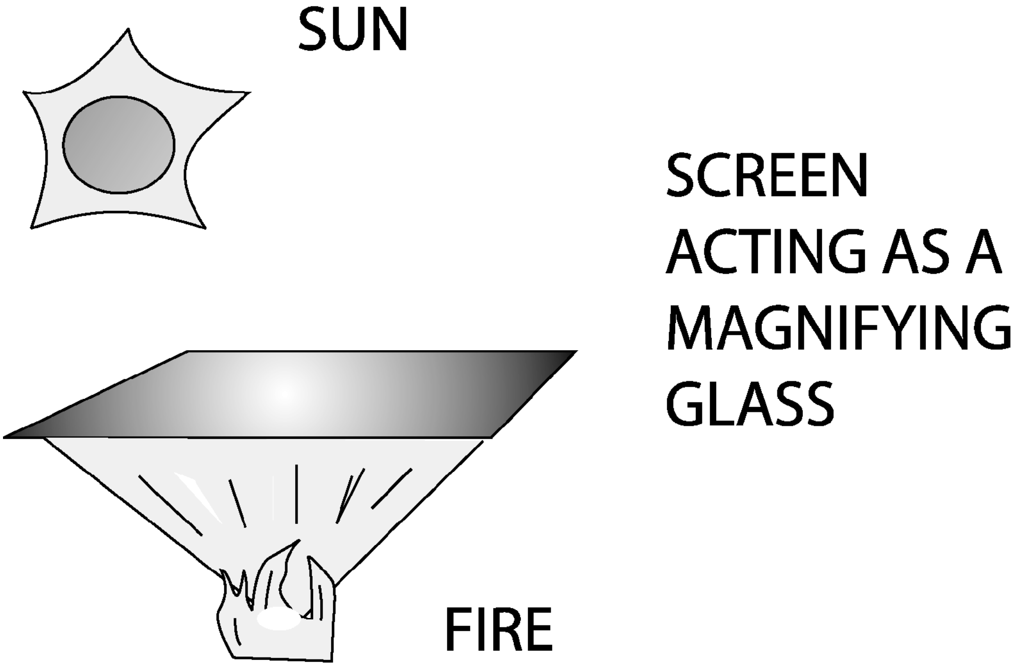
Please assemble with screws in the order shown and tighten with the same torque.

13.3. PTV screen assemblies


Screen assemblies
Protective screen
FRONT
Label on
lower left corner
(front side)
Labels on
opposite sides
Front cabinet
Label on
lower left corner
(rear side)
Lenticular screen
(note vertical ridges)
REAR
Fresnel screen
(note circular ridges)

13.4. Screen assemblies warning

When storing or disposing of screen assemblies, be sure not to place them in direct sunlight. These screens may act as a magnifying glass and could cause a fire.


SUN
SCREEN
ACTING AS A
MAGNIFYING
GLASS
FIRE

14. B + voltages table

Preparation:

Set the following controls

- **Picture to Normal**
- **Bright to Normal**
- **Volume to MIN (0)**

Procedure:

1. **Apply a NTSC COLOR BAR pattern**
2. **Connect the negative lead of the digital voltmeter to TPGND1 (cold ground).**
3. **Connect the positive lead of the digital voltmeter to each test point and confirm the B+ voltages.**

No.	D-Board Test point	Voltage
1	C830 (+)	138.6±1.0
2	TPD13	19.0±1.5
3	TPD12	19.0±1.5
4	TPD11	-19.5±1.5
5	TPD10	22.0±1.5
6	C845 (-)	-22.5±1.5
No.	A-Board Test points	Voltage
1	TP118	5.0±0.5
2	TP114	2.5±0.5
3	TP070	5.0±0.5
4	L893	9.0±0.5
5	TP137	30.0±0.5

15. Service Mode (electronic controls)

This receiver has electronic technology using the IC bus concept. It performs as a control function and it replaces many mechanical controls. Instead of adjusting mechanical controls individually, many of the control functions are now performedby using “on screen display menu”. (The service adjustment mode.)

NOTE:

It is suggested that the technician reads all the way through and understand the following procedure for entering/exiting the service adjustment mode; then proceed with the instructions working with the receiver. When becoming familiarwith the procedure, the flow chart for service mode may be used as a quick guide.

15.1. Quick entry to service mode:

When minor adjustments need to be done to the electronic controls, the method for entering the service mode without removal of the cabinet back is as follows, using the remote control:

1. **Select SET-UP icon, enter “Program CH” and select CABLE mode**

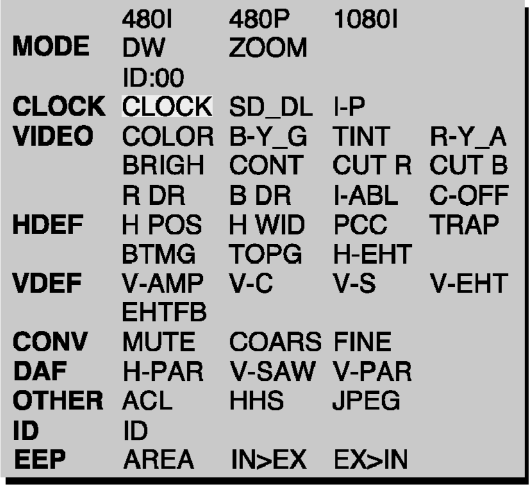
in “Input Setup” option.

2. **Select TIMER icon and set SLEEP time for 30 Min.**
3. **Press “OK” then VOL up to exit menus.**
4. **Tune to the Channel 124.**
5. **Adjust VOLUME to minimum (0).**
6. **Press VOL ← (decrease) on receiver. Red “CHK” appears in upper corner.**

To toggle between aging and service modes:
While the “CHK” is displayed on the left top corner of the CRT, pressing “OK” and “VOL” UP on the TV simultaneously will toggle between the modes. Red “CHK” for service modeand yellow “CHK” for aging.

7. **Press POWER on the remote control to display the service adjustment modes menu, select adjustment by pressing the VOL right/left buttons and CH up/down buttons on the remote and OK to enter the adjustment.**

Service mode menu



	480I	480P	1080I	
MODE	DW	ZOOM		
	ID:00			
CLOCK	CLOCK	SD_DL	I-P	
VIDEO	COLOR	B-Y_G	TINT	R-Y_A
	BRIGH	CONT	CUT R	CUT B
	R DR	B DR	I-ABL	C-OFF
HDEF	H POS	H WID	PCC	TRAP
	BTMG	TOPG	H-EHT	
VDEF	V-AMP	V-C	V-S	V-EHT
	EHTFB			
CONV	MUTE	COARS	FINE	
DAF	H-PAR	V-SAW	V-PAR	
OTHER	ACL	HHS	JPEG	
ID	ID			
EEP	AREA	IN>EX	EX>IN	

15.2. Exiting the service mode:

This PTV goes out from service mode when it is unplugged or turned OFF. To exit the service mode, turn the TV OFF or unplug the PTV from AC.

Other method
Press OK and POWER on the receiver simultaneously for at least 2 seconds.The receiver momentarily performs a self-check, tuned in channel 3 with a preset level of sound. To completely make an entire reset of the PTV unplug AC cord from AC outletand plug it back in, then turn PTV power ON.Any programmed channels, channels caption data and some others user defined settings will be erased when performing this reset.

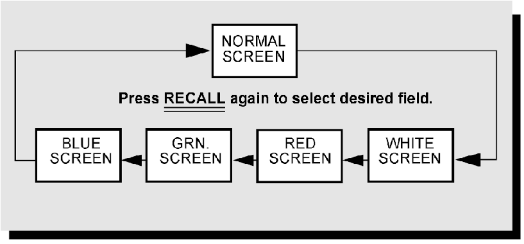
IMPORTANT NOTE

Always check that PTV exits the service mode

To check colors:

Press RECALL on the remote control when in service mode (red “CHK” is displayed) to enter the purity field check mode.

Color check



15.3. Service adjustment default values for items

DESCRIPTION	REGISTER	FORMAT				
		NTSC (480i)	480i ZOOM	480P	480P ZOOM	
CLOCK ADJ	CLOCK	124	N/A	N/A	N/A	
FIRMWARE DOWNLOAD	SD_DL	00	00	00	00	
INTERLACED TO PROGRESSIVE	I-P	00	N/A	00	00	
COLOR	COLOR	20	N/A	N/A	N/A	
MAGENTA TINT ADJ	B-Y_G	2B	N/A	N/A	N/A	
TINT	TINT	85	N/A	N/A	N/A	
YELLOW TINT ADJ	R-Y_A	96	N/A	N/A	N/A	
SUB-BRIGHTNESS	BRIGH	09 F8	N/A	N/A	N/A	
SUB-CONTRAST	CONT	02 9F	N/A	N/A	N/A	
RED CUT-OFF	CUT R	01 F5	N/A	N/A	N/A	
BLUE CUT-OFF	CUT B	02 23	N/A	N/A	N/A	
RED DRIVE	R DR	64	N/A	N/A	N/A	
BLUE DRIVE	B DR	42	N/A	N/A	N/A	
INDIVIDUAL ABL CHECK	I-ABL	VARIABLE	N/A	VARIABLE	N/A	VA
CUT OFF ADJ	C_OFF	00	00	00	N/A	
HORIZONTAL POSITIONING	H POS	01 83	01 83	01 83	N/A	
HORIZONTAL WIDTH	H WID	51	51	51	N/A	
PINCUSHION CORRECTION	PCC	40	40	40	N/A	
TRAPEZOID	TRAP	81	81	81	N/A	
BOTTOM CORNER PINCUSHION	BTMG	B0	B0	B0	N/A	
TOP CORNER PINCUSHION	TOPG	B4	B4	B4	N/A	
HORIZONTAL EHT PRESET	H-EHT	N/A	N/A	N/A	N/A	
VERTICAL SIZE	V-AMP	00 94	00 94	00 94	N/A	
VERTICAL LINEARITY	V-C	87	87	87	N/A	

DESCRIPTION	REGISTER	FORMAT			
		NTSC (480i)	480i ZOOM	480P	480P ZOOM
VERTICAL S CORRECTION	V-S	59	59	59	N/A
VERTICAL EHT PRESET	V-EHT	N/A	N/A	N/A	N/A
FLYBACK EHT PRESET	EHTFB	FF	FF	FF	N/A
MUTE CONVERGENCE	MUTE	00	00	00	N/A
COARSE ADJ	COARS	00	00	00	N/A
FINE ADJ	FINE	00	00	00	N/A
H DAF ADJUSTMENT	H-PAR	0	0	0	N/A
V SAW DAF ADJUSTMENT	V-SAW	0	0	0	N/A
V DAF ADJUSTMENT	V-PAR	0	0	0	N/A
ACL ADJUSTMENT	ACL	00	00	0	N/A
JPEG SERVICE MENU	JPEG	00	00	0	N/A
ID*	ID	00	00	00	00
AREA	AREA	FIX	FIX	FIX	N/A

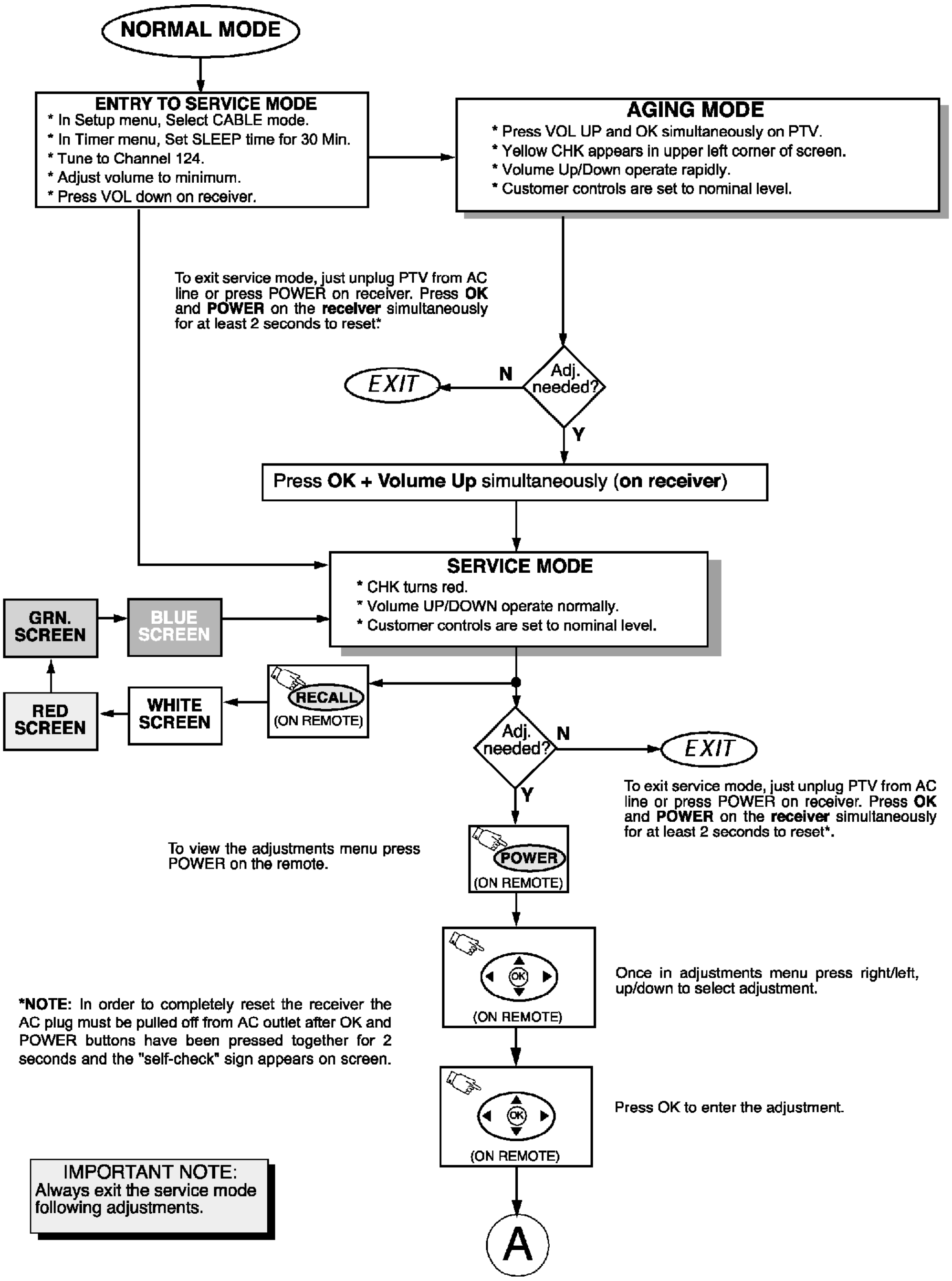
***IMPORTANT:**

The default ID register value should not be modified in any way, it has been already set to a factory default value specifically for the models listed in this manual.

NOTE:

The above table shows the default values for the service items, this values can change depending on the serviced PTV.

15.4. Instructional flow for service mode


NORMAL MODE
ENTRY TO SERVICE MODE
* In Setup menu, Select CABLE mode.
* In Timer menu, Set SLEEP time for 30 Min.
* Tune to Channel 124.
* Adjust volume to minimum.
* Press VOL down on receiver.
AGING MODE
* Press VOL UP and OK simultaneously on PTV.
* Yellow CHK appears in upper left corner of screen.
* Volume Up/Down operate rapidly.
* Customer controls are set to nominal level.
EXIT
N
Adj. needed?
Y
Press OK + Volume Up simultaneously (on receiver)
SERVICE MODE
* CHK turns red.
* Volume UP/DOWN operate normally.
* Customer controls are set to nominal level.
GRN. SCREEN
BLUE SCREEN
RED SCREEN
WHITE SCREEN
RECALL
(ON REMOTE)
Adj. needed?
N
EXIT
Y
POWER
(ON REMOTE)
OK
(ON REMOTE)
OK
(ON REMOTE)
A

To exit service mode, just unplug PTV from AC line or press POWER on receiver. Press **OK** and **POWER** on the **receiver** simultaneously for at least 2 seconds to reset*

To exit service mode, just unplug PTV from AC line or press POWER on receiver. Press **OK** and **POWER** on the **receiver** simultaneously for at least 2 seconds to reset*.

To view the adjustments menu press POWER on the remote.

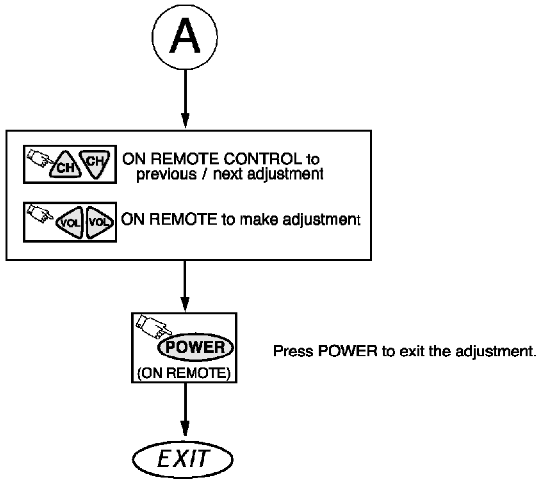
Once in adjustments menu press right/left, up/down to select adjustment.

***NOTE:** In order to completely reset the receiver the AC plug must be pulled off from AC outlet after OK and POWER buttons have been pressed together for 2 seconds and the "self-check" sign appears on screen.

Press OK to enter the adjustment.

IMPORTANT NOTE:
Always exit the service mode following adjustments.

15.5. Instructional flow for service mode (continued...)


A
CH CH
ON REMOTE CONTROL to previous / next adjustment
VOL VOL
ON REMOTE to make adjustment
POWER
(ON REMOTE)
Press POWER to exit the adjustment.
EXIT

Press POWER to exit DAC's MENU then press OK and POWER buttons on the PTV simultaneously for at least 2 seconds to exit service mode and reset*.

***NOTE:** In order to completely reset the receiver the AC plug must be pulled off from AC outlet after OK and POWER buttons have been pressed together for 2 seconds and the "self-check" sign appears on screen.

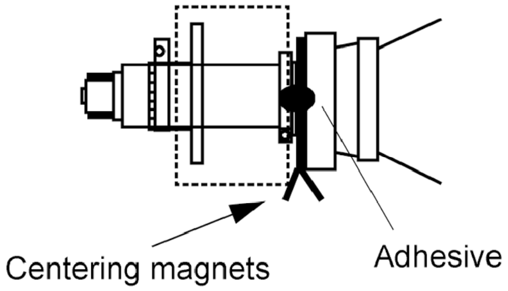
16. CRT Set Up

CAUTION:

Insure that yoke plugs are reconnected on D-Board before turning the PTV ON to prevent damage to the horizontal output transistor and/or CRTs.

1. **Connect test generator to the antenna terminal and set for a monoscope pattern.**
2. **Loosen yoke clamp, seat yoke against bell of CRT and rotate to correct yoke tilt (compare to adjacent CRT). Tighten yoke clamp.**
3. **Remove adhesive from centering tabs and set centering tabs for zero correction.**

Adhesive removal


Centering magnets
Adhesive

4. Cover replacement CRT lens and static converge the tubes not replaced, if needed. Check size and linearity of pattern and adjust as required
5. Uncover replacement CRT lens and cover other two CRT lenses. Adjust electrical and optical focus (lens), if required.
6. Uncover all CRT lenses and use yoke centering magnet to converge replacement CRT (in center area of screen only) with other two CRTs. Disregard of convergence in areas other than center area.
7. Perform white balance adjustments.

16.1. Dynamic focus adjustments

1. Focus adjustments should be performed after 1 hour of aging.
2. Use oscilloscope with 100 : 1 probe.
3. Apply a NTSC crosshatch pattern to adjust focus.
4. Adjust the red, blue and green focus VR on the focus block for best focus of overall picture of each CRT.
5. To change DAF DATA, enter to service mode, then press POWER on remote to display DACs menu, then select DAC by pressing CH (RIGHT/LEFT) and VOL (UP/DOWN), then press OK to enter to DAC, then adjust by pressing VOL (RIGHT/LEFT); pressOK, to save press OK again or OTHER key to exit without saving.

Procedure:

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set top box DTV decoder.

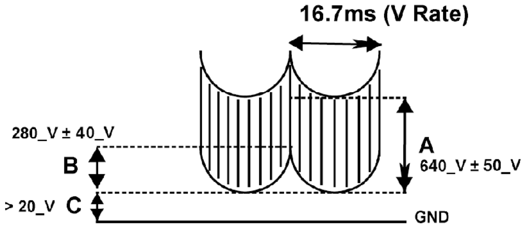
1. Enter to service mode and set the following default DATA

H-PAR	+247
V-SAW	+1
V-PAR	+15

NOTE:
The signal (NTSC, 1080i and NTSC in ZOOM option), should be applied and displayed to enter values for specific format adjustment.

2. For 1080i set the default values.
3. For NTSC and NTSC ZOOM apply a white pattern and perform the following steps.
4. Connect the scope probe to D30, GND to Q551 heat sink.
5. Confirm that level of A is 640 ± 50V, adjust / “H-PAR” DAC to set to specification level.
6. Confirm that the voltage level in D30 is similar between point E and F, if not, adjust V-SAW DAC.
7. Confirm that level of B is 280 ± 40 V, adjust / “V-PAR” DAC to set to specification level.
8. Confirm that level of C is more than 20 V, adjust / “H-PAR” DAC to set to specification level.

Dynamic focus adjustment waveform



16.2. Focus - Electrical & optical adjustments

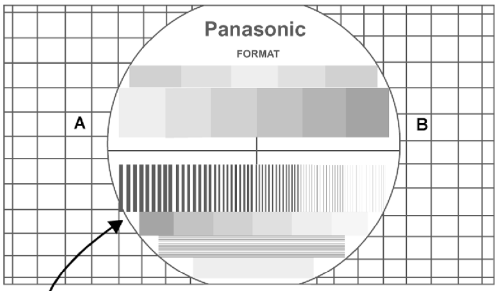
(use for minor adjustment or for final adjustment, for complete adjustment see following section.)

Electrical Adjustment

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic’s TU-DST51 set-top box DTV decoder.

1. Apply a crosshatch with dots pattern

Lens focus adjustment

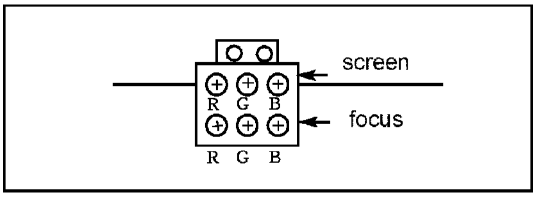


Adjust electric focus VR and lens focus on this circle

	RED	GREEN	BLUE
Electric focus	B	A/B	A
Optical Focus	B	A/B	A

2. Set VIDEO “C_OFF” DAC from 00 to 02, and project only red. Adjust red focus VR so that focus is best

Focus pack



3. Adjust red lens focus (mechanical) until focus is best.
4. Adjust red focus VR again.
5. Set VIDEO “C_OFF” DAC from 00 to 01, and project only green.
6. Repeat steps for green only.
7. Set VIDEO “C_OFF” DAC from 00 to 03, and project only blue.
8. Repeat steps for blue only.

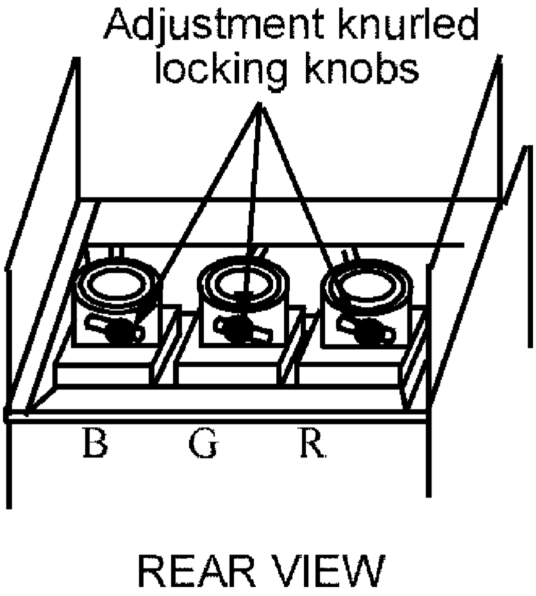
16.2.1. Focus - Optical lens adjustment

Optical adjustments

NOTE:
This adjustment normally should not require resetting unless the lenses have been replaced or adjustment has changed.

1. Optical focus adjustment is located on the top of each CRT lens system. Loosen the adjustment knurled locking knob.

Optical lens focus adjustment



2. Turn the PTV ON. Apply and view a crosshatch with dots pattern.
3. Adjust each lens focus for best focus while viewing each CRT.
4. Cover the red and blue CRT, projecting green only. Rotate the green lens for best focus around screen center area.
5. Do the same for the red focus lens while projecting red only.
6. Repeat for blue.
7. Align VM coils.

17. Electronic Adjustments

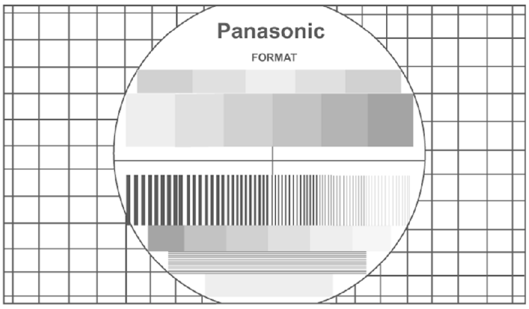
17.1. Horizontal phase adjustment (H POS)

This adjustment is intended to correct the horizontal position of the picture

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic’s TU-DST51 set-top box DTV decoder.

1. Apply a pattern that lets adjust the image to correct vertical size (see above note).
2. Set VIDEO “C_OFF” DAC from 00 to 01 (to project only green).
3. Set DAC MUTE from 00 to 01 (disabling digital convergence).

4. Turn green deflection yoke until line is perfectly horizontal.
5. Adjust “H POS” DAC data so that pattern is in the center of screen.
6. Enable digital convergence by changing DAC MUTE from 01 to 00.
7. Set VIDEO “C_OFF” DAC from 01 to 00



17.2. Centering magnets adjustment

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic’s TU-DST51 set-top box DTV decoder.

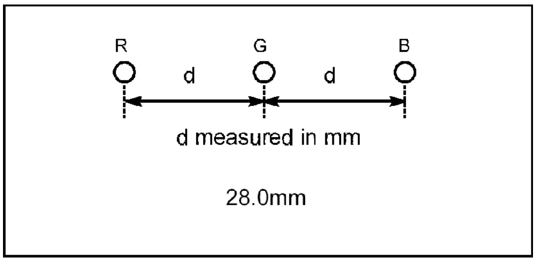
Procedures:

1. Apply a crosshatch pattern with dots.
2. Set VIDEO “C_OFF” DAC from 00 to 01 to project only green.
3. Set DAC MUTE from 00 to 01 (disabling digital convergence).
4. Loose the deflection coil screw on the green CRT.
5. Adjust green deflection coil until the horizontal center line is horizontal.
6. Adjust centering magnets until the green pattern is equal on left and right. Adjust also for horizontal and vertical tilt.

NOTE:
Push deflection coil to top of CRT neck, then tighten deflection screw after adjusting each CRT centering and tilt.

7. Set VIDEO “C_OFF” DAC from 01 to 03 to project only blue. Adjust deflection coil until the horizontal center line matches the pattern of the grid and is leveled.
8. Adjust blue centering magnets until the pattern center is at the appropriate distance as indicated on the following figure.

Centering magnets adjustment



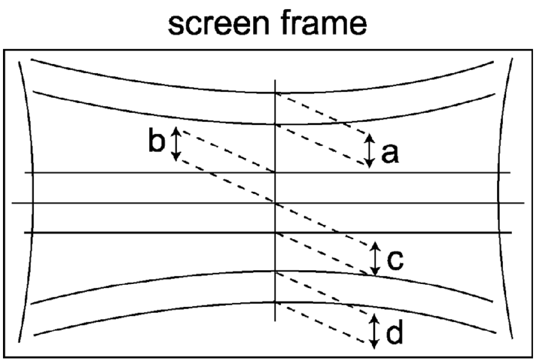
9. **Set VIDEO “C_OFF” DAC from 01 to 02 to project only red.**
10. **Adjust red deflection coil until the horizontal center line matches the pattern of the grid and is leveled.**
11. **Adjust red centering magnets until the pattern center is at the appropriate distance as indicated on figure.**
12. **Enable digital convergence by changing DAC MUTE from 01 to 00.**
13. **Set VIDEO “C_OFF” DAC from 02 to 00. Following the adjustment, make sure that all deflection coils are pushed completely toward the CRT cones and that all screws are tightened.**

17.3. Vertical linearity adjustment (V-C and V-S)

This adjustment is intended to make the picture vertically proportional (top, center and bottom)

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic’s TU-DST51 set-top box DTV decoder.

1. **Apply a pattern that lets adjust the image to correct vertical linearity (see above note).**
2. **Set VIDEO “C_OFF” DAC from 00 to 01 (to project only green).**
3. **Set DAC MUTE from 00 to 01 (disabling digital convergence).**
4. **Adjust centering magnets so that the center of the pattern get aligned with screen frame center.**
5. **Adjust VDEF “V-C” and “V-S” DAC until vertical size is proportional on top and bottom. Confirm to correct linearity in the middle of the screen.**
6. **Set DAC MUTE from 01 to 00 (disabling digital convergence).**
7. **Set VIDEO “C_OFF” DAC from 01 to 00**



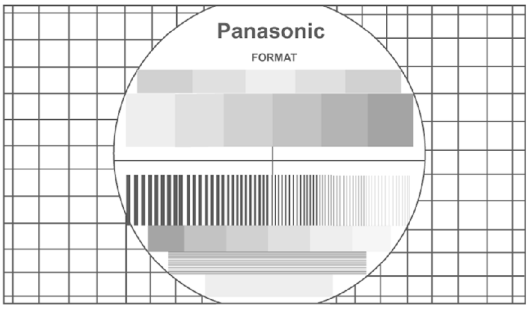
a=d, b=c

17.4. Vertical size adjustment (V-AMP)

This adjustment is intended to correct the vertical size of the picture.

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

1. **Apply a pattern that lets adjust the image to correct vertical size (see above note).**
2. **Set VIDEO "C_OFF" DAC from 00 to 01 (to project only green).**
3. **Set DAC MUTE from 00 to 01 (disabling digital convergence).**
4. **Adjust centering magnets so that the center of the pattern get aligned with screen frame center.**
5. **Adjust VDEF "V-AMP" DAC until vertical size is proportional on top and bottom.**
6. **Set DAC MUTE from 01 to 00 (disabling digital convergence).**
7. **Set VIDEO "C_OFF" DAC from 01 to 00**



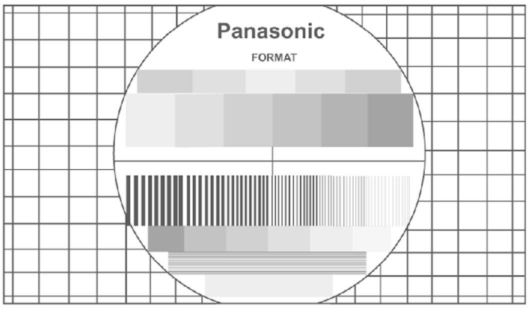
17.5. Horizontal size adjustment / (H_POS)

This adjustment is intended to correct the horizontal position of the picture.

NOTE:

1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

1. **Apply a pattern that lets adjust the image to correct horizontal position (see above note)**
2. **Set VIDEO "C_OFF" DAC from 00 to 01 to project only green.**
3. **Set DAC "MUTE" from 00 to 01 (disabling digital convergence).**
4. **Turn green deflection yoke until line is perfectly horizontal.**
5. **Adjust "H WID" DAC data so that pattern has the correct horizontal size.**



6. **Set DAC MUTE from 00 to 01 (disabling digital convergence).**
7. **Set VIDEO "C_OFF" DAC from 01 to 00.**

17.6. Pincushion adjustment (PCC)

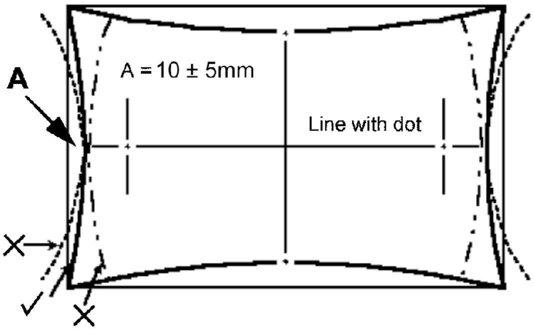
This adjustment is intended to correct curved sides of the picture.

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

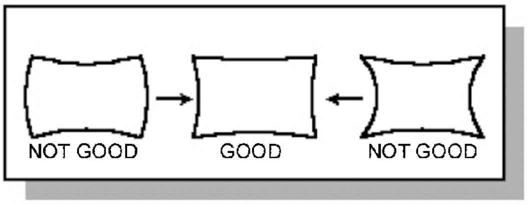
Procedure:

1. **Apply a pattern that lets adjust the image to correct curved sides (see above note)**
2. **Set VIDEO "C_OFF" DAC from 00 to 01 to project only green.**
3. **Set DAC "MUTE" from 00 to 01 (disabling digital convergence)**
4. **If the distance at "A" is not 10 ± 5mm, enter H DEF "H WID" DAC and adjust by VOLUME UP/DOWN until it is 10± 5mm.**

Pincushion adjustment


A
A = 10 ± 5mm
Line with dot

Pincushion


NOT GOOD
GOOD
NOT GOOD

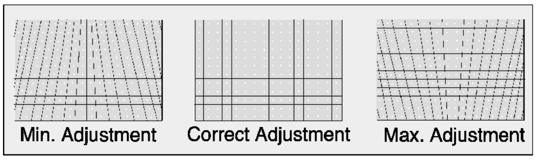
5. If not all corners of cross hatch appear in screen, enter V DEF “V-AMP” DAC and adjust until they appear.
6. Confirm that measurement of “A” has not changed.
7. Enable digital convergence by changing DAC MUTE from 01 to 00.
8. Set VIDEO “C_OFF” DAC from 01 to 00.

17.7. Trapezoid adjustment (TRAP)

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic’s TU-DST51 set-top box DTV decoder.

Procedure:

1. Apply a crosshatch pattern.
2. Enter service mode, select “TRAP” and adjust DATA with VOLUME keys in remote so that lines at right and left are vertical like a solid line.


Min. Adjustment
Correct Adjustment
Max. Adjustment

17.8. Horizontal size adjustment (H WID)

This adjustment is intended to adjust horizontal width of the picture.

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

1. Apply a pattern that lets adjust the horizontal size.
2. Set VIDEO "C_OFF" DAC from 00 to 01 to project only green.
3. Set DAC "MUTE" from 00 to 01 (disabling digital convergence).
4. In service mode, adjust "H WID" DAC until the picture horizontal size is balanced at left and right side of screen.
5. Set DAC "MUTE" from 01 to 00 (disabling digital convergence).
6. Set VIDEO "C_OFF" DAC from 01 to 00.

17.9. Sub-Bright adjustment (BRIGH) and ABL check

This adjustment is intended to set 7 IRE signal to black level mode.

Procedure:

1. Set PICTURE MODE TO VIVID, PICTURE settings to normal, NATURAL COLOR to OFF and COLOR TEMPERATURE to NORMAL.
2. Connect meter (positive lead) to D31 pin 2 and (negative lead) to D31 pin 1.
3. Apply a color bar with no color or if available a grey levels pattern.
4. Adjust DAC "BRIGH" data so that bar near to black bar becomes near black
5. Apply an HD 1080i signal and repeat this adjustment for HD 1080i mode
6. To check ABL apply a white pattern and put user bright control (BRIGTHNESS in Picture menu) control to max. and confirm that reading on meter is 12.4 ± 0.8V.

17.10. Individual ABL Check (I-ABL)

Procedure:

1. In PICTURE menu set the picture to "NORMAL".
2. Apply a pure blue flat signal from a signal generator or another

source.

3. **In service mode select “I-ABL” DAC from service menu.**
4. **Confirm that the 3 hex values that appear on screen (below the “I-ABL” label) are close to 0, i.e. “00 00 00”**
5. **If the “I-ABL” values differ too much from 0, repeat bright and ABL adjustment again.**

17.11. Red, green & blue screen Cut-Off

1. **Use either a no input signal condition or raster from the NTSC generator.**
2. **Observing the green tube directly or via a reflective surface, adjust the VR on focus pack for the green tube for minimum noise.**
3. **Adjust the noise level in the red and blue tubes to match the noise level in the green tube.**

17.12. White balance adjustment

NOTE:
1080i, 480p, 480I pattern can be obtained from Panasonic’s TU-DST51 set-top box DTV decoder.

Prior to this adjustment, perform sub-contrast adjustment. This adjustment requires the service user skills in observing what a screen without color should look like (white picture).

Preparation:

1. **Set the following in the user picture menu as follows:**

    - PIC MODE to VIVID
    - COLOR to center (31)
    - PICTURE to max (63)
    - BRIGHT to center (31)
    - SHARPNESS to min. (0)
    - TINT to center (31)
    - NATURAL COLOR to OFF
    - COLOR TEMPERATURE to COOL

1. **Enter the service mode.**

2. Apply a black and white pattern to one of the video inputs (see above note) color bar with no color.

17.12.1. High light white balance adjustment

1. Adjust DAC R_DR for red and B_DR for blue adjustments.
2. Make sure the screen is not blue or green. The screen should be white in the white area.
3. Check the black and white area for a black and white picture with even shades of gray and no color tint in the picture.

17.12.2. Low light white balance adjustment

1. Adjust DAC CUT_R for red and DAC CUT_B for blue.
2. Check the screen for even white in all areas, no color.
3. Check the black and white pattern for a black and white picture, even shades of gray and no color tint in the low light areas.
4. Repeat the high light and low light white balance again until the white balance tracks from high light to low light.

17.13. Color adjustment (TINT, B-Y_G, R-Y_A)

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

This adjustment requires that the servicer use the skills in observing what a colorbar pattern should looks like.

Preparation:

1. Set the following in the user picture menu as follows:

    - PIC MODE to VIVID
    - COLOR to center (31)
    - PICTURE to max (63)
    - BRIGHT to center (31)
    - SHARPNESS to min. (0)
    - TINT to center (31)
    - NATURAL COLOR to OFF
    - COLOR TEMPERATURE to COOL

Procedure:

1. **Apply a color bar pattern**
2. **Adjust DAC “TINT” so that the fourth bar from right to left becomes purple and good color balance.**
3. **If the adjustment is high, the bar will look pinkish, if it is low will look bluish.**
4. **Adjust “B-Y_G” so blue look natural, and the rest of the colors become in balance.**
5. **Adjust “R-Y_A” so red look natural, and rest of the colors become in balance.**
6. **Check that white bar is real white, no bluish or reddish or tending to become grey.**

17.14. Tint and color check

Set picture mode to VIVID mode. Again, the service ability to see color and the balance of color is important for theses adjustments.

Tint check

1. **In picture menu set PICTURE NORMAL to YES.**
2. **Apply color bars to the video input.**
3. **Magenta is composed of two colors, blue and red.**
4. **Check to see that magenta does not have too much blue or too much red.**
5. **Check cyan. Cyan is composed of blue and green. It should not have too much blue or green.**
6. **Use a test signal from a VCR or laser disk that has a pre-recorded close up of a signal that has good flesh tones.**
7. **The signal on the VCR or laser disk should look normal.**

Color Check

Using a clean RF or video signal, set the color level so that it does not saturate or appear harsh. Make sure that color is not set so that it appears dull and washed out. Look for natural colors, try

to adjust the picture to appear as a normalphotograph.

17.15. Clock Adjustment (CLOCK)

Preparation:
Connect the frequency counter from TP0PLL (A-Board Connector A31 pin 56) to cold ground.

Note:
Frequency Counter probe capacitance should be 8pF or less.

Procedure:

1. **Turn the PTV “ON” with the A.C. power applied.**
2. **Measure TP0PLL (A-Board Connector A31 pin 56) for frequency and record the reading.**

Note:
Pin measurement must have at least four digits of resolution following the decimal point. Example : 000.0000

3. **Place the PTV into service mode for making electronic adjustment, select the clock adjustment DAC CLOCK and change value to 128.**
4. **Calculate and set CLOCK based on the following formula:**

$$CLOCK = 128 + 0.450x106x\frac{\{732.422-TP0LL[\mathrm{Hz}]}{732.4220}\}$$

Note:
TP0PLL measurement will not change regardless of the value stored in CLOCK.

17.16. Receiver Firmware Upgrade

1. **First check that receiver is operating out of service mode (normal use).**
   IMPORTANT:
   For better results in this procedure, be sure that the set is already powered ON and if the set is powered OFF, wait at least 10 seconds after turning ON the receiver before inserting the SD service card to the service slot.

2. **Check the current software version of receiver by pressing on front panel the next sequence rapidly:**
   VOLUME UP and MENU buttons at the same time, then CHANNEL UP and MENU buttons at the same time.
3. **A status screen will appear displaying information about the System.**
4. **The "System" information displays the current software version of the receiver along with the release date.**
5. **Insert the SD service card in the back of the receiver in the slot with a sign "SERVICE ONLY".**
6. **The receiver will automatically display a screen, showing the current software version of the receiver (right) and the software version stored in the SD service card (left), (i.e. ROM Ver: 00010306 indicates that current ROM version is 1.3.6.). In case that receiver doesn't show this screen enter service mode (see service mode page 27), display the service menu by pressing POWER on the remote and select "SD_DL" DAC register.**
7. **Press OK button on the remote to start the software upgrade on the receiver.**
   IMPORTANT!:
   ONCE THAT DOWNLOADING PROCESS HAS BEGUN IT CANNOT BE CANCELLED. DURING SOFTWARE DOWNLOADING DO NOT DISCONNECT THE AC PLUG FROM OUTLET!!, THIS COULD RESULT IN A PERMANENT DAMAGE TO THE SERVICE CARD AND TO THE RECEIVER AS WELL.
8. **Once that the download is complete a screen appears with the next instructions:**
   A. Remove the SD card from the back of the TV set.
   B. Disconnect the power cable from the wall outlet.
   C. Reconnect the power cable to the wall outlet.
9. **Press POWER on the receiver to turn ON.**
10. **Check the current software version of receiver by pressing on front panel the next sequence rapidly:**
    VOLUME UP and MENU buttons at the same time, then CHANNEL

UP and MENU buttons at the same time.

11. **Press EXIT to clear the screen and go back to normal use mode.**

17.17. JPEG Viewer Software Upgrade

1. **With the receiver powered ON, insert the SD service card in the front panel slot, then automatically, a download menu will appear. If the download menu doesn't appear. Enter service mode, display the service menu by pressing POWERon the remote and select "JPEG" DAC register. Select option No. 6 with CH keys to acces the "JPEG Program Download" menu.**

   NOTE:

   To abort the download process just press "EXIT" on remote in the "JPEG Program Download" menu.

   IMPORTANT:

   For better results in this procedure, be sure that the set is already powered ON and if the set is powered OFF, wait at least 10 seconds after turning ON the receiver before inserting the SD service card to the JPEG viewer slot.

2. **Select the newest version of software with CH keys, then press OK.**
3. **A confirmation sign appears asking if the selected version wants to be downloaded, then with VOL keys select "YES" and press OK to start downloading.**

   IMPORTANT!:

   ONCE THAT DOWNLOADING PROCESS HAS BEGUN IT CANNOT BE CANCELLED. DURING SOFTWARE DOWNLOADING DO NOT DISCONNECT THE AC PLUG FROM OUTLET!!, THIS COULD RESULT IN A PERMANENT DAMAGE TO THE SERVICE CARD AND TO THE RECEIVER AS WELL.

4. **Once the downloading is finished, disconnect the AC plug from outlet then remove the SD service card from the slot.**
5. **Connect again the AC plug to the outlet and turn power ON.**
6. **Press both OK and POWER buttons on the receiver's front panel to acces to the self-check screen and wait a few seconds.**
7. **If the JPEG module is working accordingly, a "JPEG OK" sign will appear and within, the last upgrade version of the JPEG viewer**

software, i. e. “JPEG OK : 01.00.04” .

8. Press any key to exit the self-check screen or unplug AC cord to completely reset.

17.18. JPEG Factory and Service Mode (JPEG)

1. Enter service mode, and with the SD service card already inserted (JPEG viewer slot), from the service menu select “JPEG” DAC register.
2. A screen displaying the “JPEG Factory and Service Mode” menu will appear with 6 options and at the bottom the current JPEG software version.
3. To select one of the options press the CH keys on remote.
4. Option No. 1 will perform an auto test from option No. 2 trough No. 5.
    - SDRAM Test: will perform a test of the internal memory of the JPEG reader device, showing for a few seconds a green screen followed by a magenta screen. If the test is succesfull an OK flag will appear on menu.
    - Color bar Test: this will perform a color display test in the JPEG reader device showing in the screen a color rainbow bar pattern at the top and a black and white pattern at the bottom. If the colors are shown correctly the JPEG color driveris working properly. Press exit on remote to go back to service menu.
    - SD Card Test: this will perform a JPEG picture reading test on the SD Card. The SD card inserted must have pictures with JPEG format to pass the test.
    - PC Card Test: this will perform a JPEG picture reading test on the PC Card. The PC card inserted must have pictures with JPEG format to pass the test.
    - Download: enters to the “JPEG Program Download” menu.
5. Press EXIT to go back to service mode.

17.19. CableCARD check

1. First check that receiver is operating out of service mode (normal

use).

2. Insert the CableCARD (POD).
3. Check that the fan on the back of the set should be turned ON.

   IMPORTANT:

   If the fan is disconnected accidentaly or if the fan is damaged and it's not turned ON when the module is inserted, the PTV will automatically be set in protection mode and it will shut down. Connect again the fan correctly or replace itwith a new one (for order number see parts list section) and press power to turn ON.
4. A sign on the screen with instructions should appear indicating that the CableCARD has been inserted.
5. Check the current software version of receiver by pressing on front panel the next sequence rapidly:

   VOLUME UP and MENU buttons at the same time, then CHANNEL UP and MENU buttons at the same time.
6. A status screen will appear displaying information about the System status.
7. The "System" information displays the current software version, release date, memory and POD status.
8. If the CableCARD is operating properly the POD status will indicate that the CableCARD is present. If the CableCARD is inserted and the POD status indicates that is not present, the CableCARD could be damaged.
9. To exit the system status screen, press exit.
10. Remove the CableCARD and check that a sign on the screen appears indicating that the card has been removed.

18. Convergence adjustment

Turn PTV on and allow it to warm up for 30 minutes prior to perform adjustments (apply a WHITE PATTERN).

Helpful Hint:
EEPROM jig can be used to adjust convergence, by copying convergence adjustment from a convergence adjusted PTV to other. Refer to EEPROM copy jig section on this service manual. Also EEPROM copy jig can be used to back-up the data before to performadjustments.

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

IMPORTANT NOTICE:
It is strongly recommended to first read and understand the following section prior to make any adjustment.

This PTV uses the scheme described below to correct for misconvergence of the three CRT projection tubes. There are various modes to this operation.

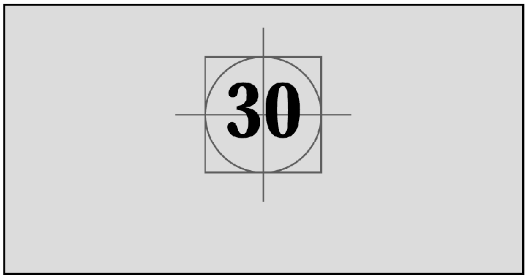
Preparation:
Place the convergence alignment template (see Convergence alignment template section on this manual) over the PTV screen. Align the center lines of the template with the mechanical center markers on the PTV screen frame. If the template is not available,create one using the dimensions provided in Convergence alignment template section on this manual.Remote control must be used during the procedure.

Procedure:
Apply the convergence alignment template to the PTV screen frame to converge the green raster only. Remove the convergence alignment template following this alignment. The red and blue rasters can then be aligned to the green raster.

Raster Set-Up:

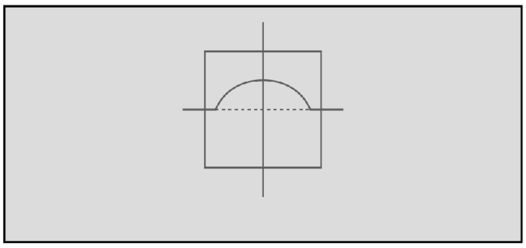
1. **Enter to service mode (red CHK).**
2. **In SET-UP (menu) enter to "Other Adj." menu and set CONVERGENCE values (GH, GV) to 0.**
3. **Cover red & blue lens with caps.**
4. **Apply a pattern to adjust with 1080i format:**
5. **Select "COARSE" DAC, then press OK to enter to "Coarse adjustment" mode.**
6. **Press "0" key on remote.**
7. **Press OK key on remote to enter to "TEST_POS" mode.**
8. **Move pattern by pressing VOL right - left and CH up - down so that the cursor center overlap monoscope pattern center.**

Aligned cross-hair pattern with center of picture pattern



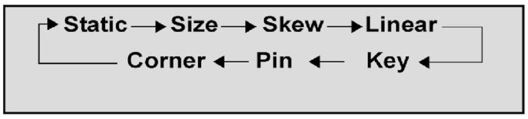
9. Press “5” key on remote to exit superimpose mode (monoscope pattern disappear).
10. Press “TV/VIDEO” key to enter “DATA_POS” mode
11. Adjust by pressing VOL right - left so that peak of curve is the same position as center of cursor

Symmetrical shape



12. Press “TV/VIDEO” key on remote to enter “OSD_POS” mode.
13. Press “5” key on remote so that monoscope pattern appears (superimpose mode)
14. Move cursor by pressing VOL right - left and CH up - down so that cursor center overlap monoscope pattern center
15. Press “0” key to go back to “Coarse adjustment” mode.
16. Press “TV/VIDEO” key to cycle through “Coarse adjustment” options

“COARSE” modes cycle



17. To change to “Fine Adjustment Mode” options (“FINE” DAC), press “TV/VIDEO” key on remote for at least 3 seconds, to go back to “Coarse Adjustment Mode” options press “TV/VIDEO” on remote again for 3 seconds.

18. In “Fine Adjustment Mode” options, press “MUTE” key on remote to switch between “cursor” mode and “data” mode.

- Cursor mode: Allows cursor movement by pressing VOL right - left and CH up - down.
- Data mode: Allows making adjustment by pressing VOL right - left and CH up - down.

19. Either “Coarse Adjustment” options or “Fine Adjustment” options, press “R-TUNE” repeatedly key on remote to cycle through different color adjustments (R, G, B, White)
20. In “Fine Adjustment” options, press “4” key on remote to ADD crossed sections to pattern and make effect visible between crossed sections.
21. To store adjustments press “7”, then “OK” key on remote, otherwise press “POWER” then “OK” to exit adjustments without saving.
22. Remote functions, PRESS:

PRESS BUTTON	TO
1(forward) or 3(back)	change viewed color
2	change pattern
4 (only FINE mode)	change crossed sections
5	overlap
* 7	save data
8	copy from
9	clear
POWER	exit
RECALL	display values
R-TUNE	cycle colors
TV/VIDEO	change mode
TV/VIDEO (3 secs)	switch convergence mode (FINE/ COARSE)

*
When “7” is pressed and the data is saved, it will overwrite the factory default.

18.1. Coarse adjustment mode (COARS)

NOTE:
1080i, 480p, 480i pattern can be obtained from Panasonic's TU-DST51 set-top box DTV decoder.

NOTE:
It is strongly recommended to first read and understand the following section prior to make any adjustment. / Convergence adjustment must be performed for 480i_p (same for interlace & progressive), ZOOM 480i and 1080i.

Procedure:

1. Enter to "G-SIZE" mode:

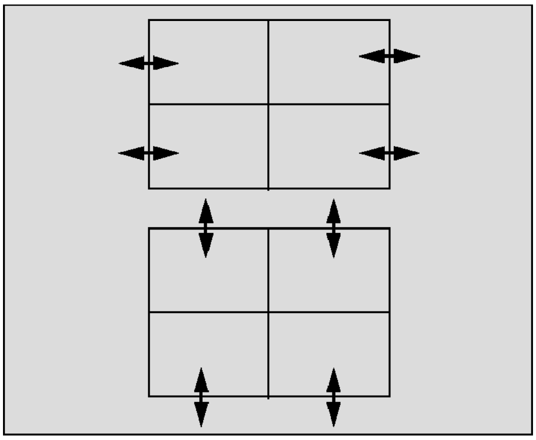
- **Select "COARSE" DAC**
- **Press OK on remote**
- **TV/VIDEO (repeatedly)**
- **R-TUNE (repeatedly)**

2. Press "2" repeatedly and apply the pattern of border and cross.

3. Press "RECALL" key to display values

4. Adjust size so that the line of the border closes to the screen frame at top, bottom, left and right, by pressing CH up-down and VOL right-left

"SIZE" mode adjustment

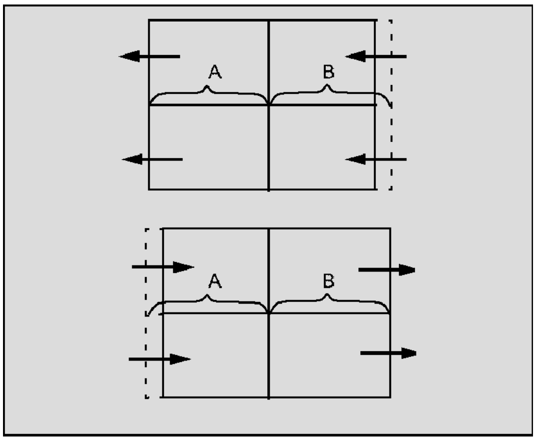


5. Press "7" then "OK" key on remote to save changes.

6. Enter to linearity "G-LINEAR" mode by pressing "TV/VIDEO".

7. Adjust linearity by pressing VOL right-left until A=B.

“LINEAR” mode adjustment



8. Press “7” then “OK” key on remote to save changes.

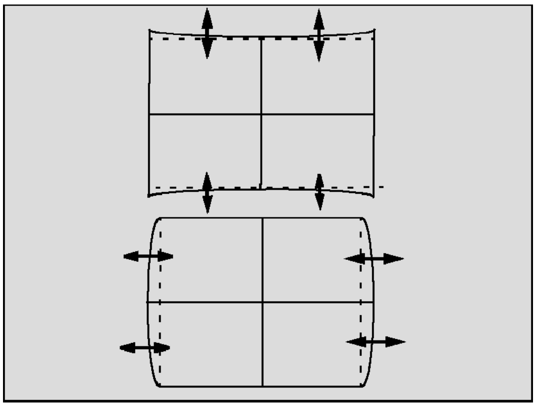
9. Enter to PIN “G-PIN” mode by pressing “TV/VIDEO”

10. Adjust V_PIN by pressing CH up-down (see figure)

11. Adjust H_PIN by pressing VOL right-left.

12. Press “7” then “OK” key on remote to save changes

“PIN” mode adjustment

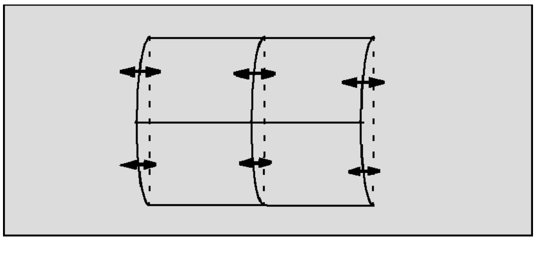


13. Press “7” then “OK” key on remote to save changes

14. Adjust by pressing VOL right-left (see figure)

15. Press “7” then “OK” key on remote to save changes

“CORNER” mode adjustment

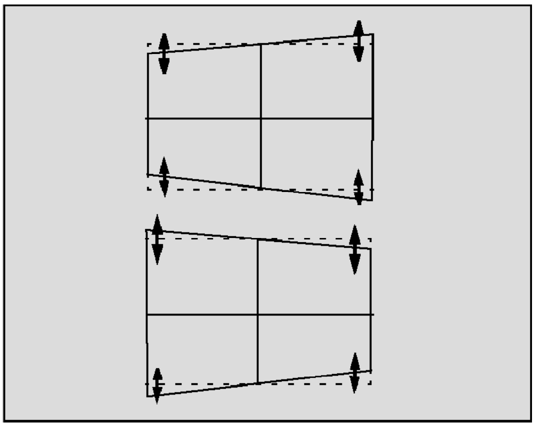


16. Enter to KEY “G-KEY” mode by pressing TV/VIDEO.

17. Adjust by pressing CH up-down (see figure)

18. Press “7” then “OK” key on remote to save changes

“KEY” mode adjustment



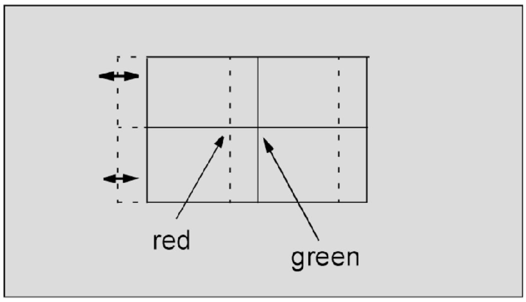
NOTE:
Confirm that pattern looks like a square and almost overlaps the screen frame, check that vertical and horizontal line center match with the marks on screen frame, if linearity is not good enough, repeat adjustments.

19. Enter to “STATIC” mode by pressing TV/VIDEO.

20. Press “1” or “3” repeatedly until green and red only are shown.

21. Adjust “R-STATIC” so that the center of red overlaps with the center of green

“STATIC” mode adjustment

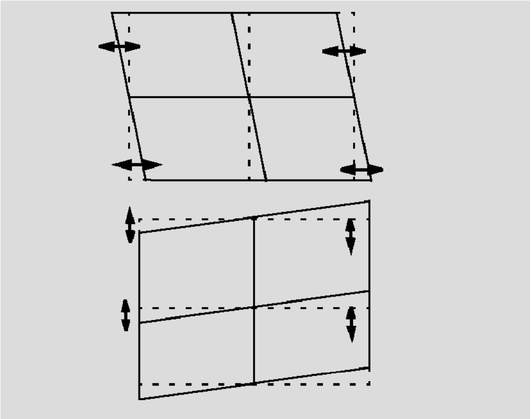


22. Enter to SKEW “R-SKEW” mode by pressing TV/VIDEO

23. Adjust “R-SKEW” so that the vertical and horizontal line of center overlaps with green (see figure)

24. Press “7” then “OK” key on remote to save changes

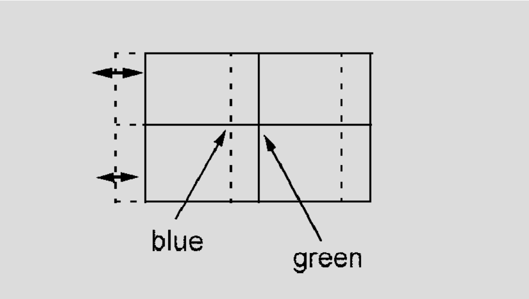
“SKEW” mode adjustment



NOTE:
Remember always save data following each adjustment by pressing “7” key on remote, then OK.

25. **Enter to LINEARITY “R-LINEAR” mode by pressing TV/VIDEO.**
26. **Adjust Horizontal linearity (see figure)**
27. **Enter to SIZE “R-SIZE” mode by pressing TV/VIDEO.**
28. **Adjust so that the line on the border closes to the screen frame at top, bottom, left and right (see figure).**
29. **Enter to PIN “R-PIN” mode by pressing TV/VIDEO**
30. **Adjust horizontally and vertically (see figure)**
31. **Enter to CORNER “R-CORNER” mode by pressing TV/VIDEO.**
32. **Adjust corners (see figure).**
33. **Enter to KEY “R-KEY” mode by pressing TV/VIDEO**
34. **Adjust KEY (see figure).**
35. **Display pattern of border and cross, then check that red overlaps green pattern, if it is not satisfactory, repeat from step 19.**
36. **Enter to STATIC “B-STATIC” mode.**
37. **Press “1 or 3” key repeatedly on remote until only green and blue pattern are displayed.**
38. **Adjust B-STATIC so that the center of blue overlaps with the center of green (see figure).**

“B-STATIC” mode adjustment



39. Perform all adjustments for blue (B-SKEW, B-LINEAR, B-SIZE, B-PIN, B-CORNER, B-KEY)

40. Display border and cross pattern and confirm that blue overlaps with green pattern, if it is not satisfactory, repeat for blue.

41. Press “1 or 3” key repeatedly on remote until green, red and blue (white), confirm that red and blue overlaps with green pattern.

42. Press “7” key on remote, then OK to save changes.

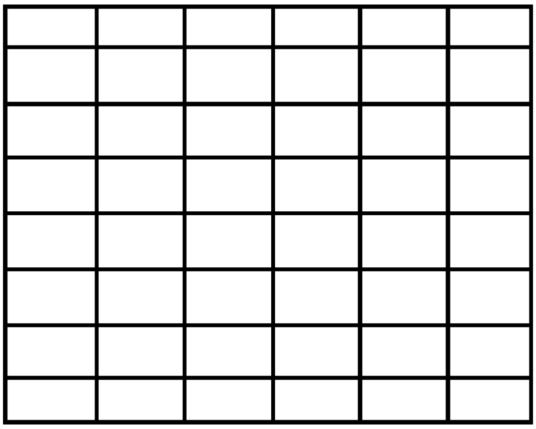
43. Press POWER then OK to exit adjustments or press TV/VIDEO for at least 3 seconds to change to Fine Adjustment Mode.

18.2. Fine adjustment mode (FINE) (convergence)

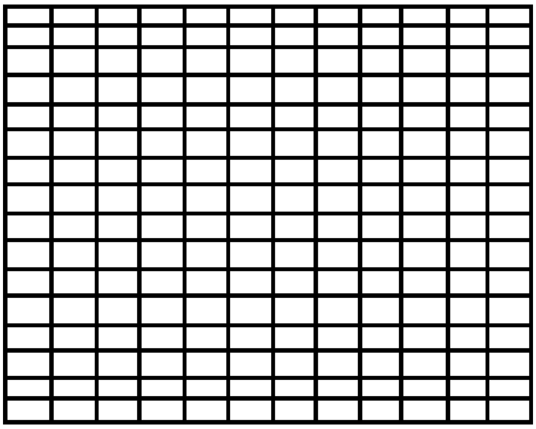
NOTE:
It is strongly recommended to first read and understand the following section prior to make any adjustment.

HELPFUL HINT:
The easiest way to adjust convergence is to start adjusting from the center of the screen to the borders in all the convergence adjustments.
Once in “FINE” convergence mode press “4” on remote control frequently to change crossed sections, this helps to check convergence more accurate in more sections of the picture. Please see the following figuresthat show the cycle, this does not have any effect on the positions of the cursor.

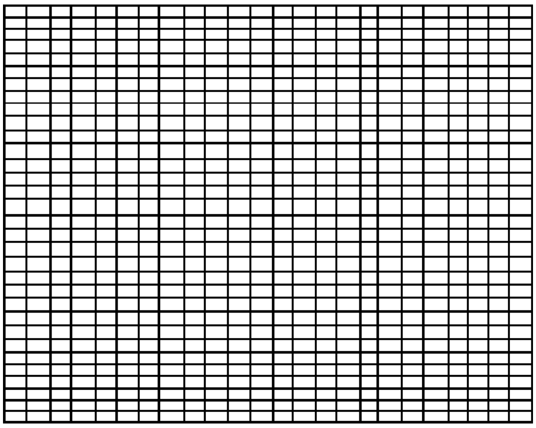
“FINE” convergence mode default Grid



“FINE” convergence mode after pressing “4” on remote



“FINE” convergence mode after pressing “4” on remote



PRESS BUTTON	**TO**
1(go) or 3(back)	**change color view**
2	**change pattern**
4 (only FINE mode)	**change crossed sections**
5	**overlap**
*** 7**	**save data**
8	**copy from**
9	**clear**
POWER	**exit**
RECALL	**display values**
R-TUNE	**cycle colors**
TV/VIDEO	**change mode**
TV/VIDEO (3 secs)	**switch convergence mode (FINE/ COARSE)**

*****
When “7” is pressed and the data is saved, it will overwrite the factory default.

In “FINE ADJUSTMENT MODE” options, press “MUTE” key on remote to switch between “cursor” mode and “data” mode.

- **Cursor mode (cursor flashing): Allows cursor movement by pressing VOL right - left and CH up - down.**
- **Data mode (cursor fixed): Allows making adjustment by pressing VOL right - left and CH up - down.**

PROCEDURE:

1. To Enter to “G-EASY” mode (for green):

- **Select “FINE” DAC**
- **Press OK on remote**
- **Press TV/VIDEO (repeatedly) to select mode.**
- **Press R-TUNE (repeatedly) to select color**

2. Press “2” repeatedly and apply the pattern of crosshatch.

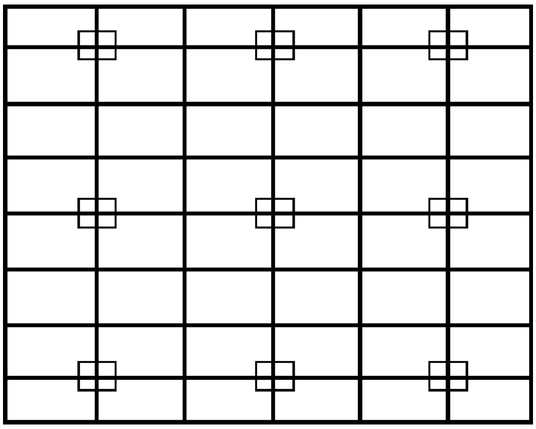
3. Press “4” frequently to change crossed sections, this helps to check convergence more accurate in more sections of the picture.

4. Press “1 or 3” repeatedly until the pattern becomes green.

5. Press RECALL to display values.

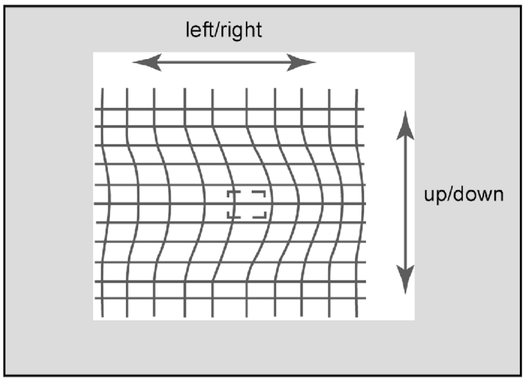
6. In “EASY” mode, the adjustment value changes by 4 steps
7. “EASY” mode allows to move lines horizontally and vertically from the center of cursor

“EASY” mode adjustment, possible locations for cursor



8. This mode affects a wide area around the cursor than other adjustment modes, See values on screen by pressing RECALL on remote
9. Begin adjustment from the center to the edge of the screen.
10. Adjust when the cursor is not flashing by pressing CH up/down and VOL right/left on the remote control, if the cursor is flashing press MUTE on the remote

“EASY” mode adjustment



11. To move the cursor press MUTE on the remote (cursor flashes), then move the cursor to any of the positions for “EASY” mode
12. This adjustment may help to make rounded lines become straight lines.
13. Adjust to make lines as straight as possible

14. Enter to POINT “G-POINT” (for green) mode by pressing TV/ VIDEO.

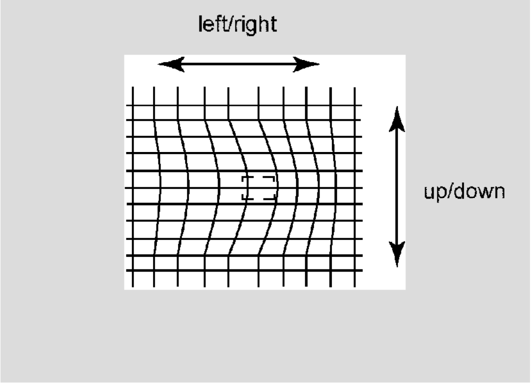
15. “POINT” mode allows to move line horizontally and vertically from the perimeter of cursor making rounded lines become straight

16. In “POINT” mode, the adjustment data changes by 2 steps, See values on screen by pressing RECALL on remote

17. When the cursor is located in the outer area of the border the cursor starts to flash from one side to other, the location is for the non-visible area and the most outer side of screen (inside the ovals area, see figure); This applies to “LINE”, “POINT” & “ORIGIN.POINT” modes.

18. Begin adjustment from the center to the edge of the screen

“POINT” & “ORIG. POINT” mode adjustment



19. Adjust to make lines as much straight as possible

20. When slightly adjustment is needed, use “ORIG. POINT” mode.

21. To enter to “G-ORIG. POINT” (for green) mode press TV/VIDEO.

22. With “ORIG. POINT”, the adjustment data changes by 1 step, this allows more detail in the adjustment. Display values on screen by pressing RECALL on remote

23. Confirm that green adjustment is good enough, if adjustment is not satisfactory, repeat adjustments.

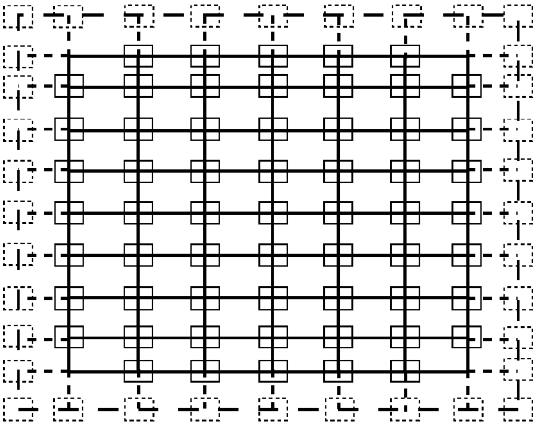
24. Enter to LINE “G-LINE” mode by pressing TV/VIDEO.

25. LINE mode allows to move each single line horizontally and vertically (see figure)

26. Begin adjustment from the center to the edge of the screen (see figure)

27. Adjust to make distribute lines

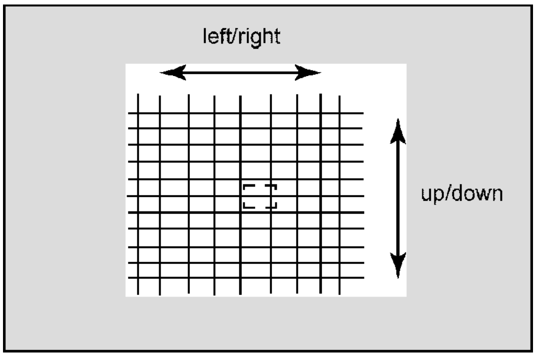
LINE, POINT, ORIG. POINT modes, possible locations for cursor



28. Then press “1 or 3” on the remote until red and green appears.

NOTE:
Since convergence adjustment will not allow to adjust every single cross section of the grid, it is very important to adjust, so that overall looks best, in “FINE” mode press “4” frequently on remote control tocycle crosshatch pattern to verify convergence.

“LINE” mode adjustment



29. Perform adjustments for red so that red overlaps green, do not move green.

30. Press “1 or 3” on the remote until yellow (red and green) and blue appears, do not move green or red.

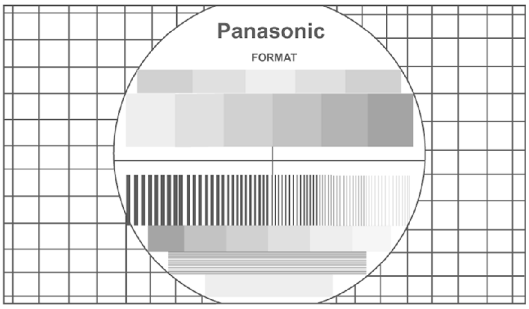
31. Perform adjustments so that blue overlaps Yellow (red and green).

32. Press “1 or 3” key on remote to display red, green and blue (white).

33. At this point the crosshatch pattern should look white.
34. If the crosshatch pattern is not only white, repeat adjustment for that specific color (red or blue).
35. Once the crosshatch pattern looks only white, perform the adjustments for White only (“POINT”, “ORIG. POINT” & “LINE”), notice that each adjustment must be only for white (red, green,blue)
36. Adjust white for a good line distribution and make lines completely straight.
37. Press “7” key on remote, then OK to save changes.
38. Press POWER then OK to exit convergence adjustments (DACs menu appears).

18.3. Horizontal and vertical size check

1. Apply a pattern that permits to check that horizontal and vertical proportion of the image is correct
2. Confirm that horizontal and vertical center of the picture is located in the center of the screen.
3. Check that the image is proportional horizontally and vertically, proportion is different on every aspect.



18.4. Convergence alignment template

The convergence alignment template is a grid approximately the size of the viewing screen used to ensure the proper size and shape of the alignment rasters. It is 6 blocks across by 8 blocks high. The grid dimensions vary with the mode of operation.Applya convergence alignment template to the viewing screen of the PTV. Make sure the center lines are properly aligned. If a template is not available, one can be created by following the instructions below.Create a convergence alignment template by drawing apattern, as in the figure, in the actual dimensions on transparent film or tracing paper. Start with the Horizontal and Vertical Center Axis and work

outwards until the pattern is complete. Pay attention to the actual dimensions of the pattern.

Template dimensions:

- 47” Models: 1036mm horizontal x 584mm vertical.

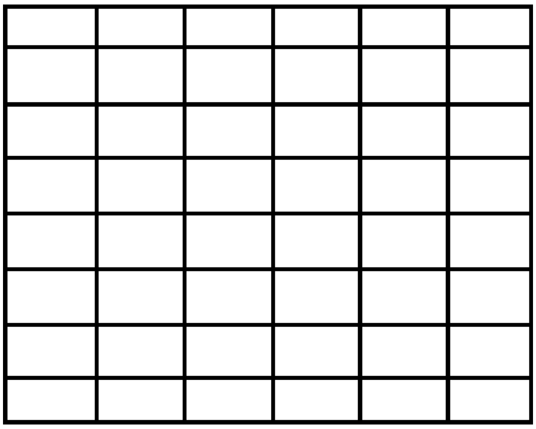
- 53” Models: 1036mm horizontal x 584mm vertical.

Grid dimensions:

SCREEN	MODE	HORIZONTAL	VERTICAL
47’’	1080i	40.00 mm	20.80 mm
53’’	1080i	46.60 mm	23.10 mm

NOTE:

A convergence alignment template, part number TXFQD01ESER2 for 47” and TXFQD01FSER1 for 53” is available through Matsushita/Panasonic Services



19. Reference of PDF links color

DESCRIPTION OF PDF LINK COLORS	
TYPE	DESTINATION
SCHEMATIC	
YELLOW ON IC	IC ON PCB
YELLOW ON CONNECTOR	CONNECTOR ON PCB
YELLOW ON SCHEMATIC	PCB
CYAN	WAVEFORM
GREEN ON SIDE	SCHEMATIC CONTINUED
GREEN ON CONNECTOR	CONNECTOR CONNECTION
BLUE ON IC	VOLTAGE
PCB	
BLUE ON IC	IC ON SCHEMATIC
BLUE ON CONNECTOR	CONNECTOR ON SCHEMATIC
BLUE ON PCB	SCHEMATIC
GREEN ON SIDE	PCB CONTINUED
BLOCK DIAGRAMS	
GREEN ON IC	IC ON SCHEMATIC
GREEN ON SIDE	BLOCK DIAGRAM CONTINUED

20. Conductor views

20.1. A-Board Printed Circuit (page 1 of 2)

20.2. A-Board Printed Circuit (page 2 of 2)

20.3. D-Board Printed Circuit (page 1 of 2)

20.4. D-Board Printed Circuit (page 2 of 2)

20.5. DC-Board Printed Circuit (bottom view)

20.6. DC-Board Printed Circuit (top view)

20.7. DG-Board Printed Circuit (bottom view)

20.8. DG-Board Printed Circuit (top view)

20.9. DT-Board Printed Circuit (bottom view)

20.10. DT-Board Printed Circuit (top view)

20.11. DV-Board Printed Circuit (bottom view)

20.12. DV-Board Printed Circuit (top view)

20.13. H-Board Printed Circuit

20.14. JG-Board Printed Circuit (bottom view)

20.15. JG-Board Printed Circuit (top view)

20.16. K, G & R Printed Circuit Boards

20.17. LB-Board Printed Circuit

20.18. LG-Board Printed Circuit

20.19. LR-Board Printed Circuit

20.20. T-Board Printed Circuit

21. Block diagrams

21.1. Audio block diagram page (1 of 2)

21.2. Audio block diagram (page 2 of 2)

21.3. Video block diagram (page 1 of 2)

21.4. Video block diagram (page 2 of 2)

22. Schematic diagrams

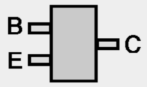
22.1. Schematic diagrams notes

Notes:

IMPORTANT SAFETY NOTICE

THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A ⚠ IN THE SCHEMATIC.

CHIP TRANSISTOR LEAD DESIGNATION



SCHEMATIC NOTES

1. Resistors are carbon 1/4W unless noted otherwise.
2. Capacitors are ceramic 50V unless noted otherwise.
3. Coil value notes is inductance in µH.
4. Test point indicated by ●; Test point but no pin ○.
5. Components indicated with ⚠ are critical parts and replacement should be made with manufacture specified replacement parts only.
6. ▬ (**BOLD LINE**) indicates the route of B+ supply.
7. The schematic diagrams are current at the time of printing and are subject to change without notice.
8. Ground symbol ⏚ indicates **HOT GROUND CONNECTION**; ⊥ indicates COLD GROUND.

NOTE: All other component symbols are used for engineering design purposes.

VOLTAGE MEASUREMENTS

1. Voltage measurement:
   - AC input to the Receiver is 120V. NTSC (HD, 1125i & 525P when applicable) signal generator is connected to the antenna of the Receiver. (Color bar pattern of 100 IRE white and 7.5 IRE black.)
   - All Picture and Audio adjustments are set to Normalize.
     TV ANT/CABLE - (Set-Up Menu) in TV/ANT Mode
     Volume - Min.
     TV/Video SW - TV position
     Audio Mode - Stereo
   - Voltage readings are nominal and may vary ±10% on active devices. Some voltage reading will vary with signal strength and picture content.
   - Supply voltages are nominal.
2. Ground symbol ⏚ indicates ground lead connection of meter.
   Incorrect ground connection will result in erroneous readings.

CAUTION: ***Incorrect ground connection of the test equipment will result in erroneous readings.***

WAVEFORM MEASUREMENTS

1. ③ indicates waveform measurement. (Measurement can be taken at the best accessible location in common to the indicated point.)
2. Taken with an NTSC signal generator connected to the antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black.)
3. Customer Controls (Picture/Audio Menu) are set to Normalize. Volume is set to "MIN".
4. All video and color waveforms are taken with a wideband scope and a probe with low capacitance (10 to 1). Shape and peak altitudes may vary depending on the type of Oscilloscope used and its settings.
5. Ground symbol ⏚ shown on waveform number indicates (Hot) ground lead connection of the Oscilloscope.

CAUTION: Incorrect ground connection of the test equipment will result in erroneous readings.

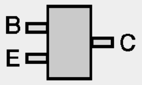
22.2. Notas de los diagramas esquemáticos

Notas

NOTA DE SEGURIDAD

LOS DIAGRAMAS ELÉCTRICOS INCLUYEN CARACTERÍSTICAS ESPECIALES MUY IMPORTANTES PARA LA PROTECCIÓN CONTRA RAYOS-X, QUEMADURAS Y DESCARGAS ELÉCTRICAS. CUANDO SE DE SERVICIO ES IMPORTANTE USAR PARA REEMPLAZO DE COMPONENTES CRITICOS, SOLO PARTES ESPECIFICADAS POR EL FABRICANTES. LOS COMPONENTES CRITICOS ESTAN SEÑALADOS EN LOS DIAGRAMAS POR EL SIMBOLO ⚠.

IDENTIFICACIÓN DE TERMINALES PARA TRANSISTORES EN *CHIP*



NOTAS DE LOS DIAGRAMAS

1. Las Resistencias son de Carbón de 1/4W, a menos que se indique otra característica.
2. Los Capacitores son de Cerámica para 50V, a menos que se indique otra característica.
3. El valor indicado de las Bobinas es la inductancia expresada en μH.
4. Los puntos de prueba en la terminal de algún componente son indicados por ⚲ Los puntos de prueba fuera de los componentes se indican con ⚲.
5. Los componentes señalados con el símbolo ⚠ son considerados componentes críticos y deben ser reemplazados sólo con las partes especificadas por el fabricante.
6. ▬ (**LINEA GRUESA**) indica las líneas de alimentación de los Voltajes B+.
7. Los diagramas eléctricos están sujetos a cambio sin previo aviso.
8. El símbolo ⏚ indica que es una conexión a **Tierra Caliente** y el símbolo ⊥ indica conexión a **Tierra Fría**.

NOTA: Los demas símbolos de componentes incluidos son usados con fines de diseño.

MEDICIÓN DE VOLTAJES

1. Medición de voltaje:
    - El voltaje de entrada al Receptor es de 120V de Corriente Alterna. Un generador de patrones con formato NTSC se conecta a la entrada de la antena. (Patrón de Barras de Colores con 100 IREs para el Blanco y 7.5 IREs para el Negro.)
    - Los ajustes de los Menus Picture y Audio se normalizan.
      En el Menú Set-Up, en la opción ANTENA, se selecciona el modo de CABLE.
      El nivel de Volumen se minimiza.
      De los modos TV y Video, seleccionar el modo TV.
      Seleccionar modo Estereo del Audio.
    - Las mediciones de los voltajes son nominales y pueden variar hasta 10% en componentes en funcionamiento. Las lecturas de los voltajes pueden variar por la potencia de la señal y el contenido de la imagen.
    - Las fuentes de voltajes son nominales.
2. El símbolo ⏚ indica el tipo de tierra que se utiliza en la conexión del medidor.

PRECAUCION: SI no se utiliza la conexión a la tierra adecuada, se obtendrán mediciones equivocadas y podría dañar el equipo de medición.

MEDICIÓN DE FORMAS DE ONDA

1. Un símbolo como ③ indica el punto para medir una señal. (La medición puede hacerse en el punto con mayor accesibilidad, siempre que sea común al indicado.)
2. Se midieron utilizando un generador con formato NTSC conectado a la terminal de la antena. (Patrón de 8 Barras de Colores EAI, formato NTSC de 100 IREs para el Blanco y 7.5 IREs para el Negro.)
3. Los ajustes de usuario de los Menus PICTURE y AUDIO se normalizaron. Posteriormente el nivel de volumen se ajusta al mínimo

banda alta y con un punta de prueba de baja capacitancia (10 a 1). La forma y amplitud de las ondas puede variar según el tipo de osciloscopio que se utilice y sus características.

5. El símbolo de tierra ⏚ que aparece junto al número de la forma de onda, indica que se utiliza conexión a **Tierra Caliente** en el extremo negativo de la punta de prueba.

PRECAUCION: Si no se utiliza la conexión a la tierra adecuada, se obtendrán

ajusta al mínimo.

4. Las formas de onda de Video y Color fueron tomadas con un osciloscopio de

mediciones equivocadas y podría dañar el equipo de medición.

22.3. A-Board schematic 1 of 4

22.4. A-Board schematic 2 of 4

22.5. A-Board schematic 3 of 4

22.6. A-Board schematic 4 of 4

22.7. D-Board schematic 1 of 6

22.8. D-Board schematic 2 of 6

22.9. D-Board schematic 3 of 6

22.10. D-Board schematic 4 of 6

22.11. D-Board schematic 5 of 6

22.12. D-Board schematic 6 of 6

22.13. DC-Board schematic

22.14. DG-Board schematic 1 of 8

22.15. DG-Board schematic 2 of 8

22.16. DG-Board schematic 3 of 8

22.17. DG-Board schematic 4 of 8

22.18. DG-Board schematic 5 of 8

22.19. DG-Board schematic 6 of 8

22.20. DG-Board schematic 7 of 8

22.21. DG-Board schematic 8 of 8

22.22. DT-Board schematic 1 of 15

22.23. DT-Board schematic 2 of 15

22.24. DT-Board schematic 3 of 15

22.25. DT-Board schematic 4 of 15

22.26. DT-Board schematic 5 of 15

22.27. DT-Board schematic 6 of 15

22.28. DT-Board schematic 7 of 15

22.29. DT-Board schematic 8 of 15

22.30. DT-Board schematic 9 of 15

22.31. DT-Board schematic 10 of 15

22.32. DT-Board schematic 11 of 15

22.33. DT-Board schematic 12 of 15

22.34. DT-Board schematic 13 of 15

22.35. DT-Board schematic 14 of 15

22.36. DT-Board schematic 15 of 15

22.37. DV-Board schematic 1 of 5

22.38. DV-Board schematic 2 of 5

22.39. DV-Board schematic 3 of 5

22.40. DV-Board schematic 4 of 5

22.41. DV-Board schematic 5 of 5

22.42. G, K, R-Boards schematics

22.43. H-Board schematic 1 of 3

22.44. H-Board schematic 2 of 3

22.45. H-Board schematic 3 of 3

22.46. JG-Board schematic 1 of 4

22.47. JG-Board schematic 2 of 4

22.48. JG-Board schematic 3 of 4

22.49. JG-Board schematic 4 of 4

22.50. LB-Board schematic 1 of 2

22.51. LB-Board schematic 2 of 2

22.52. LG-Board schematic 1 of 2

22.53. LG-Board schematic 2 of 2

22.54. LR-Board schematic 1 of 2

22.55. LR-Board schematic 2 of 2

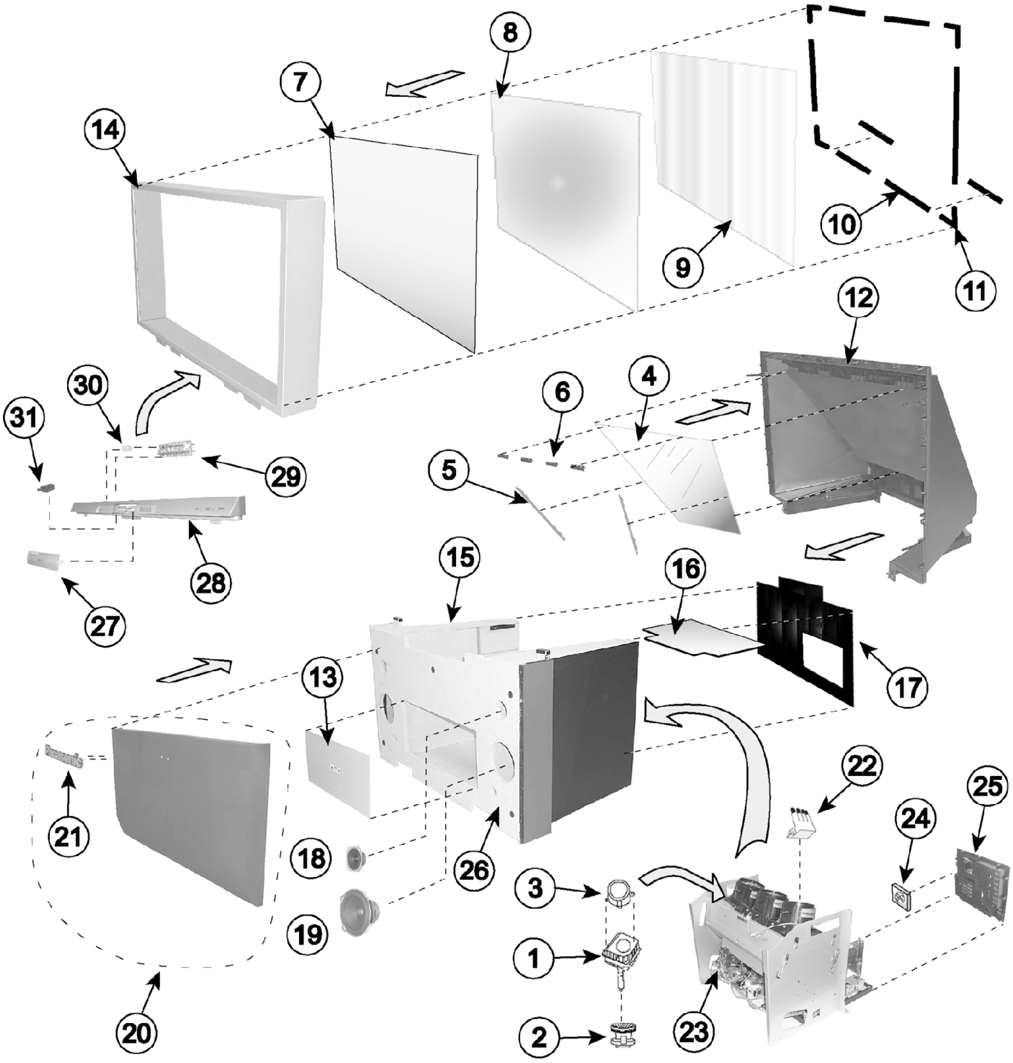
22.56. T-Board schematic 1 of 2

22.57. T-Board schematic 2 of 2

22.58. Voltages

22.59. Waveforms

23. Parts location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24. Parts list

24.1. Description of abbreviations guide

Important Safety Notice

Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use manufacturer's specified parts.

Abbreviation of part name and description

1. Resistor
Example :
ERD25TJ104 **C** 100KΩ, **J**, 1/4W
Type Allowance

Type	Allowance
C : Carbon	F : ± 1%
F : Fuse	G : ± 2%
M : Metal Oxide Metal Film	J : ± 5% K : ± 10%
S : Solid	M : ± 20%
W : Wire Wound	

2. Capacitor
Example :
ECKF1H103ZF **C** 0.01µF, **Z**, 50V
Type Allowance

Type	Allowance
C : Carbon	C : ± 0.25pF
E : Electrolytic	D : ± 0.5pF
P : Polyester Polypropylene	F : ± 1pF G : ± 3%
T : Tantalum	J : ± 5%
	K : ± 10%
	L : ± 15%
	M : ± 20%
	P : ± 100%, -0%
	Z : ± 80%, -20%

24.2. Parts list

Ref. No.	Part No.	Part Name & Description	Remarks
		CAPACITORS	
C001	ECEA1CKA470B	CAP E 47UF-16V	
C002	ECJ2VC1H220J	CAP C 22PF-J-50V	
C003	ECJ2VC1H220J	CAP C 22PF-J-50V	
C004	ECEA1HKA4R7B	CAP E 4.7UF-50V	
C005	ECEA1HKA2R2B	CAP E 2.2UF-50V	
C006	EEUFC1A471B	CAP E 470UF-10V	
C011	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C012	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C017	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C021	ECEA1HKAR22B	CAP E .22UF-50V	
C023	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C024	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C026	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C027	ECA1CM101B	CAP E 100UF-16V	
C028	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C051	EEUFC1E470B	CAP E 47UF-25V	
C052	ECKR1H103ZF5	CAP C 1000PF-50V	
C301	F2A2E100A025	CAP E 10UF-250V	
C302	ECCR1H221JC5	CAP C 220PF-J-50V	
C304	ECKW2H103PU8	CAP C .01UF-P-500V	
C305	F2A1H470A162	CAP E 47UF-50V	
C306	F2A2E100A025	CAP E 10UF-250V	
C307	ECKR1H103ZF5	CAP C .01UF-Z-50V	

Ref. No.	Part No.	Part Name & Description	Remarks
C312	ECKC3D102KBN	CAP C 1000PF-K-2KV	
C313	ECKR2H102KB5	CAP C 1000PF-K-500V	
C331	F2A1H470A162	CAP E 47UF-50V	
C332	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C333	F2A1H470A162	CAP E 47UF-50V	
C334	F2A2E470A026	CAP E 47UF-250V	
C335	ECCR1H221JC5	CAP C 220PF-J-50V	
C336	F2A1H470A162	CAP E 47UF-50V	
C337	F2A2E470A026	CAP E 47UF-250V	
C339	ECKW2H103PU8	CAP C .01UF-P-500V	
C340	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C341	F2A2E100A025	CAP E 10UF-250V	
C345	ECKC3D102KBN	CAP C 1000PF-K-2KV	
C346	ECKR2H102KB5	CAP C 1000PF-K-500V	
C361	F2A1C101A159	CAP E 100UF-16V	
C362	ECCR1H221JC5	CAP C 220PF-J-50V	
C364	ECKW2H103PU8	CAP C .01UF-P-500V	
C365	F2A2E100A025	CAP E 10UF-250V	
C366	F2A1H470A162	CAP E 47UF-50V	
C367	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C372	ECKC3D102KBN	CAP C 1000PF-K-2KV	
C373	ECKR2H102KB5	CAP C 1000PF-K-500V	
C374	F2A1C101A159	CAP E 100UF-16V	
C405	ECA1EHG102E	CAP E 1000UF-25V	
C406	ECA1EHG102E	CAP E 1000UF-25V	
C407	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C408	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C411	TCJ2VB1H822K	CAP C 8200PF-K-50V	
C412	ECQB1224KF3	CAP P .22UF-K-100V	
C413	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C414	TCJ2VB1H272K	CAP C 2700PF-K-50V	
C417	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C418	TCJ2VF1H223Z	CAP C .022UF-Z-50V	
C421	ECEA1CN220UB	CAP E 22UF-16V	
C458	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C461	ECA1HHG221B	CAP E 220UF-50V	
C501	ECA1EM101B	CAP E 100UF-25V	
C502	ECQV1H105JL3	CAP P 1.0UF-J-50V	
C503	ECKR2H102KB5	CAP C 1000PF-K-500V	
C509	ECWF2474JSR	CAP P .47UF-J-200V	
C510	TCJ2VC1H221J	CAP C 220PF-J-50V	
C511	ECWH20222JVY	CAP P 2200PF-J-2KV	⚠
C512	ECWH20102JVY	CAP P 1000PF-J-2KV	⚠
C513	ECQF4103JZH	CAP P .01UF-J-400V	⚠
C514	ECWH20222JVY	CAP P 2200PF-J-2KV	⚠
C518	ECKW3D221JBP	CAP C 220PF-J-2KVDC	⚠
C519	ECKW3D221JBP	CAP C 220PF-J-2KVDC	⚠
C520	ECQB1H103JF3	CAP P .01UF-J-50V	⚠
C522	ECWH20182JVY	CAP P 1800PF-J-2KV	⚠
C523	ECWH20182JVY	CAP P 1800PF-J-2KV	⚠
C524	ECQB1224JF3	CAP P .22UF-J-100V	

Ref. No.	Part No.	Part Name & Description	Remarks
C525	**ECEA1HN220UB**	**CAP E 22UF-50V**	
C526	**ECA2EM101E**	**CAP E 100UF-250V**	
C527	**ECKR2H102KB5**	**CAP C 1000PF-K-500V**	
C528	**ECA1HM470B**	**CAP E 47UF-50V**	⚠
C531	**ECA160V33UE**	**CAP E 33UF-160V**	
C533	**ECKR2H101KB5**	**CAP C 100UF-K-500V**	
C535	**ECA1EM471E**	**CAP E 470UF-25V**	
C601	**EEUFC1C331B**	**CAP E 330UF-16V**	
C602	**TCJ2VF1H103Z**	**CAP C .01UF-Z-50V**	
C701	**ECA1CM101B**	**CAP E 100UF-16V**	
C702	**ECKW3D271KBP**	**CAP C 270PF-K-2KV**	
C703	**ECQM2104KZW**	**CAP P .1UF-K-200V**	
C704	**ECKR2H391KB5**	**CAP C 390PF-K-500V**	
C707	**TCJ2VF1H103Z**	**CAP C .01UF-Z-50V**	
C708	**ECQE1685KFB**	**CAP P 6.8UF-K-100V**	
C801	**ECQU2A104MNB**	**CAP P .10UF-M-250VAC**	⚠
C802	**ECQU2A823MNB**	**CAP P .082UF-M-250V**	⚠
C803	**ECKCNA222ME7**	**CAP C 2200PF-M-125V**	⚠
C804	**ECKCNA222ME7**	**CAP C 2200PF-M-125V**	⚠
C805	**ECKW2H472PU7**	**CAP C 4700PF-P-500V**	⚠
C806	**ECKW2H472PU7**	**CAP C 4700PF-P-500V**	⚠
C807	**ECKW2H472PU7**	**CAP C 4700PF-P-500V**	⚠
C808	**ECA1EM101B**	**CAP E 100UF-25V**	
C809	**TCJ2VB1E223K**	**CAP C .022UF-K-25V**	
C810	**EETED2D102C**	**CAP E 1000PF-200V**	⚠
C812	**ECA1EHG471B**	**CAP E 470UF-25V**	
C814	**ECKW3D102KBP**	**CAP C 1000PF-K-2KV**	
C815	**ECQB1H152JF3**	**CAP P 1500PF-J-50V**	
C816	**ECKW3D821KBP**	**CAP C 820PF-K-2KV**	
C817	**ECKW3D102KBP**	**CAP C 1000PF-K-2KV**	
C819	**ECQB1H102JF3**	**CAP P 1000PF-J-50V**	
C820	**ECQV1H334JL3**	**CAP P .33UF-J-50V**	
C821	**ECQB1H272KF3**	**CAP P 2700PF-K-50V**	
C822	**ECA1HM220B**	**CAP E 22UF-50V**	
C823	**TCJ2VC1H151J**	**CAP C 150PF-J-50V**	
C824	**EEUFC1V151B**	**CAP E 150UF-35V**	
C825	**ECKCNA102MBB**	**CAP C .001UF-M-125V**	⚠
C826	**ECJ2VF1H104Z**	**CAP C .1UF-Z-50V**	
C830	**EETHC2C471B**	**CAP E 470PF-160V**	⚠
C831	**ECKW3D821KBP**	**CAP C 820PF-K-2KV**	
C832	**TCJ2VF1H103Z**	**CAP C .01UF-Z-50V**	
C834	**EEUFC1V222E**	**CAP E 2200UF-35V**	
C836	**ECKR3A331KBP**	**CAP C 330PF-K-1KVDC**	
C837	**ECA1EM472E**	**CAP E 4700UF-25V**	
C839	**ECKR3A331KBP**	**CAP C 330PF-K-1KVDC**	
C841	**ECA1EM472E**	**CAP E 4700UF-25V**	
C842	**ECKR3A331KBP**	**CAP C 330PF-K-1KVDC**	
C843	**ECA1VM222E**	**CAP E 2200UF-35V**	
C844	**ECKR3A331KBP**	**CAP C 330PF-K-1KVDC**	
C845	**ECA1VM222E**	**CAP E 2200UF-35V**	

Ref. No.	Part No.	Part Name & Description	Remarks
C846	ECKR3A331KBP	CAP C 330PF-K-1KVDC	
C848	ECA1CM101B	CAP E 100UF-16V	
C849	ECKR1H223ZF5	CAP C .022UF-Z-50V	
C851	ECQV1H104JL3	CAP P .10UF-J-50V	
C852	ECA1EM101B	CAP E 100UF-25V	
C854	ECA1CM101B	CAP E 100UF-16V	
C855	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C860	EEUFC1V561E	CAP E 560UF-35V	
C861	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C863	EEUFC1A102B	CAP E 1000UF-10V	
C863	EEUFC1C471LB	CAP E 470UF-16V	
C864	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C865	ECA0JM102B	CAP E 1000UF-6.3V	
C865	ECA1CM221B	CAP E 10UF-16V	
C866	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C874	ECA1CM101B	CAP E 100UF-16V	
C876	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C877	ECA1CM221B	CAP E 10UF-16V	
C878	EEUFC1V561E	CAP E 560UF-35V	
C879	EEUFC1C471LB	CAP E 470UF-16V	
C880	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C881	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C882	ECA1CM221B	CAP E 10UF-16V	
C883	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C885	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C886	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C887	EEUFC1V561E	CAP E 560UF-35V	
C888	EEUFC1V561E	CAP E 560UF-35V	
C889	ECJ2YF1E474Z	CAP C .47UF-Z-25V	
C890	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C891	EEUFC1C471LB	CAP E 470UF-16V	
C892	ECA1CM221B	CAP E 10UF-16V	
C893	EEUFC1C471LB	CAP E 470UF-16V	
C895	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C896	ECJ3VF1H224Z	CAP C .22UF-Z-50V	
C897	ECJ2VB1H152K	CAP C .0015UF-K-50V	
C902	ECQM2103KZB	CAP P .01UF-K-200V	
C903	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C904	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C906	ECQM2103KZB	CAP P .01UF-K-200V	
C907	F2A2C100A023	CAP E 10UF-160V	
C908	F2A1C101A159	CAP E 100UF-16V	
C909	F2A1C101A159	CAP E 100UF-16V	
C910	F2A2C100A023	CAP E 10UF-160V	
C912	F2A1H220A162	CAP E 22UF-50V	
C931	ECA1HM101B	CAP E 100UF-50V	
C932	ECJ2VB1H103K	CAP C .01UF-K-50V	
C933	ECA1CM101B	CAP E 100UF-16V	
C935	ECJ2VB1H102K	CAP C .001UF-K-50V	
C936	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C939	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C940	ECQM2103KZB	CAP P .01UF-K-200V	
C941	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C942	ECQM2103KZB	CAP P .01UF-K-200V	

Ref. No.	Part No.	Part Name & Description	Remarks
C943	F2A2C100A023	CAP E 10UF-160V	
C944	F2A1C101A159	CAP E 100UF-16V	
C945	F2A1C101A159	CAP E 100UF-16V	
C947	F2A2C100A023	CAP E 10UF-160V	
C962	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C963	ECQM2103KZB	CAP P .01UF-K-200V	
C965	ECKR1H103ZF5	CAP C .01UF-Z-50V	
C966	ECQM2103KZB	CAP P .01UF-K-200V	
C967	F2A2C100A023	CAP E 10UF-160V	
C968	F2A1C101A159	CAP E 100UF-16V	
C969	F2A1C101A159	CAP E 100UF-16V	
C970	F2A2C100A023	CAP E 10UF-160V	
C972	F2A1H220A162	CAP E 22UF-50V	
C1502	ECQE6104KFB	CAP P 100UF-K-100V	
C1503	ECQE6104KFB	CAP P 100UF-K-100V	
C1504	ECJ2VB1C104K	CAP C .1UF-K-16V	
C1505	ECA1CM101B	CAP E 100UF-16V	
C1506	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C1507	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C1508	ECA1CM101B	CAP E 100UF-16V	
C1509	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C1510	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C1511	TCJ2VC1H471J	CAP C 470PF-J-50V	
C1513	ECEA1EN101UB	CAP E 100UF-25V	
C1514	ECA1CM101B	CAP E 100UF-16V	
C2213	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2214	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2220	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2221	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2222	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2223	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2224	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2225	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2226	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2227	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2228	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2229	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2230	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2234	ECA1CM101B	CAP E 100UF-16V	
C2236	ECA0JM222B	CAP E 2200UF-6.3V	
C2236	ECA1CM101B	CAP E 100UF-16V	
C2238	ECA1CM101B	CAP E 100UF-16V	
C2239	ECA1CM101B	CAP E 100UF-16V	
C2303	ECA1VM101B	CAP E 100UF-35V	
C2304	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2320	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2321	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2324	ECA1CM101B	CAP E 100UF-16V	
C2326	ECA0JM332B	CAP E 3300PF-6.3V	
C2326	ECA1CM101B	CAP E 100UF-16V	
C2330	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2332	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2333	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2334	ECJ2VF1H103Z	CAP C .01UF-Z-50V	

Ref. No.	Part No.	Part Name & Description	Remarks
C2335	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2337	ECA50YT2R2KB	CAP E 2.2UF-50V	
C2338	ECA50YT2R2KB	CAP E 2.2UF-50V	
C2342	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2344	ECQB1H224JF3	CAP P .22UF-J-50V	
C2345	EEUFC1E222E	CAP E 2200UF-25V	
C2346	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2347	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2351	F1J1C225A083	CAP C 2.2UF-Z-16V	
C2352	EEUFC1E222E	CAP E 2200UF-25V	
C2354	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2355	ECJ2VC1H270J	CAP C 27PF-J-50V	
C2356	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2357	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2358	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2359	ECJ2VB1H331K	CAP C 330PF-K-50V	
C2360	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2361	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2362	ECJ2VB1H471K	CAP C 470PF-K-50V	
C2363	ECJ2VB1H682K	CAP C .0068UF-K-50V	
C2364	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2365	ECJ3VB1H104K	CAP C .1UF-K-50V	
C2367	ECQB1H224JF3	CAP P .22UF-J-50V	
C2368	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2369	ECJ2VB1H561K	CAP C 560PF-K-50V	
C2370	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2371	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2373	ECJ2VB1H682K	CAP C .0068UF-K-50V	
C2374	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2375	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2389	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2390	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2451	ECEA1HN4R7UB	CAP E 4.7UF-50V	
C2452	ECEA1HN4R7UB	CAP E 4.7UF-50V	
C2453	ECJ2VB1H332K	CAP C .0033UF-K-50V	
C2454	ECJ2VB1H332K	CAP C .0033UF-K-50V	
C2455	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2456	ECJ2VB1H333K	CAP C .033UF-K-50V	
C2457	ECQB1H222JF3	CAP P 2200PF-J-50V	
C2458	ECQB1H222JF3	CAP P 2200PF-J-50V	
C2459	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2459	ECJ2VB1C224K	CAP C .22UF-K-16V	
C2460	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2460	ECJ2VB1C224K	CAP C .22UF-K-16V	
C2461	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C2462	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2463	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2464	ECA1HM4R7B	CAP E 4.7UF-50V	
C2465	ECA1HM4R7B	CAP E 4.7UF-50V	
C2466	ECA1HM4R7B	CAP E 4.7UF-50V	
C2467	ECA1HM4R7B	CAP E 4.7UF-50V	
C2468	ECA1HM4R7B	CAP E 4.7UF-50V	
C2474	ECA1CM101B	CAP E 100UF-16V	
C2475	ECJ2VB1H103K	CAP C .01UF-K-50V	

Ref. No.	Part No.	Part Name & Description	Remarks
C2507	ECA1CM101B	CAP E 100UF-16V	
C2587	ECJ2VF1H103Z	CAP C .01UF-Z-50V	
C2588	ECA1CM102B	CAP E 1000UF-16V	
C2589	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2599	ECJ2VB1C104K	CAP C .1UF-K-16V	
C2803	ECCR1H470J5	CAP DISC 47-5-50V	
C2804	ECCR1H102J5	CAP C 1000PF-50V	
C2805	ECKW3D471KBP	CAP C 470PF-K-2KVDC	
C2806	ECES2DG101DG	CAP E 100UF-200V	⚠
C2807	ECA1EHG221B	CAP E 220UF-25V	
C2808	ECQE2333JFB	CAP P .033UF-J-200V	
C2809	ECKCNA471MB7	CAP C 470PF	⚠
C2811	ECKR2H471KB5	CAP C 470PF-K-500V	
C2812	ECA1HHG010B	CAP E 1UF-50V	
C2813	ECKR2H471KB5	CAP C 470PF-K-500V	
C2814	EEUFC1C332E	CAP E 3300PF-E-16V	
C2815	ECA1HHG100B	CAP E 10UF/50V	
C2816	EEUFC1C332E	CAP E 3300PF-E-16V	
C2850	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C2851	ECA1CM331B	CAP E 330UF-16V	
C2852	ECA1CM331B	CAP E 330UF-16V	
C2853	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C3003	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3004	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3005	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3006	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3007	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3008	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3009	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3010	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3020	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3021	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3022	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3023	ECJ2VF1C105Z	CAP C 1.0UF-Z-16V	
C3024	ECA1CM471E	CAP E 470UF-16V	
C3031	ECEA1CKA101B	CAP E 100UF-16V	
C3032	ECEA1CKA101B	CAP E 100UF-16V	
C3033	ECA1CM471E	CAP E 470UF-16V	
C3034	ECA1CM471E	CAP E 470UF-16V	
C7001	ECJ3YF1E225Z	CAP C 22MF-Z-25V	
C7002	ECJ3YF1E225Z	CAP C 22MF-Z-25V	
C7004	ECA1EHG221B	CAP E 220UF-25V	
C7006	ECA1EHG221B	CAP E 220UF-25V	
C7015	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7016	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7017	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7018	TCJ2VF1H103Z	CAP C .01UF-Z-50V	
C7032	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7033	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7034	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7035	ECJ2VF1H104Z	CAP C .1UF-Z-50V	
C7060	ECA1CHG101B	CAP E 100UF-16V	
C7061	ECA1CHG101B	CAP E 100UF-16V	

Ref. No.	Part No.	Part Name & Description	Remarks
C7150	ECA1VM470B	CAP E 47UF-35V	
C7165	ECA1VM470B	CAP E 47UF-35V	
DIODES			
D002	MAZ31500ML	DIODE ZENER	
D003	MAZ41500MF	DIODE ZENER	
D004	MAZ31500ML	DIODE ZENER	
D005	MAZ41500MF	DIODE ZENER	
D081	LN21RCPHL	DIODE	
D082	MAZ40560MF	DIODE ZENER	
D083	MAZ40560MF	DIODE ZENER	
D301	MA2C16700E	DIODE	
D302	MAZ41000LF	DIODE ZENER	
D303	TVSRM1V1	DIODE	
D304	D1NL40V70	DIODE	
D306	MA2C165001VT	DIODE	
D307	MA2C165001VT	DIODE	
D312	MA2C18800E	DIODE	
D313	MA2C18800E	DIODE	
D314	MA2C18800E	DIODE	
D315	MA2C18800E	DIODE	
D331	D1NL40V70	DIODE	
D334	MA2C165001VT	DIODE	
D335	MA2C165001VT	DIODE	
D339	MA2C18800E	DIODE	
D340	MA2C18800E	DIODE	
D341	MA2C18800E	DIODE	
D342	MA2C18800E	DIODE	
D361	D1NL40V70	DIODE	
D363	MA2C165001VT	DIODE	
D364	MA2C165001VT	DIODE	
D369	MA2C18800E	DIODE	
D370	MA2C18800E	DIODE	
D371	MA2C18800E	DIODE	
D372	MA2C18800E	DIODE	
D407	MA3X152K0L	DIODE	
D409	MA3X152K0L	DIODE	
D410	MA3X152K0L	DIODE	
D411	MA3X152K0L	DIODE	
D451	B0EAKC000003	DIODE RECTIFIER	
D452	B0EAKC000003	DIODE RECTIFIER	
D453	B0EAKC000003	DIODE RECTIFIER	
D454	B0EAKC000003	DIODE RECTIFIER	
D455	B0EAKC000003	DIODE RECTIFIER	
D456	B0EAKC000003	DIODE RECTIFIER	
D458	B0EAKL000008	DIODE RECTIFIER	
D465	MAZ40390MF	DIODE ZENER	
D466	MA3X152K0L	DIODE	
D501	D1NL40V70	DIODE	
D502	MAZ31500ML	DIODE ZENER	
D503	B0HBRV000001	DIODE	
D504	MAZ42700MF	DIODE ZENER	
D509	MA2C165001VT	DIODE	
D510	MAZ40680LF	DIODE ZENER	
D511	B0HAHP000014	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D512	D1NL40V70	DIODE	⚠
D513	MA2C165001VT	DIODE	
D515	D1NL40V70	DIODE	
D516	EU2YXV0	DIODE	
D519	AU02ZV0	DIODE	
D520	MA3X152K0L	DIODE	
D634	MA2C165001VT	DIODE	
D650	MAZ41100MF	DIODE ZENER	
D651	MAZ41100MF	DIODE ZENER	
D656	MAZ41100MF	DIODE ZENER	
D657	MAZ41100MF	DIODE ZENER	
D659	MAZ41100MF	DIODE ZENER	
D660	MAZ41100MF	DIODE ZENER	
D662	MAZ41100MF	DIODE ZENER	
D663	MAZ41100MF	DIODE ZENER	
D702	D1NL40V70	DIODE	
D801	D3SB80-4101	DIODE	⚠
D802	ERZC10VK361G	VARISTOR	⚠
D815	MA2C165001VT	DIODE	
D816	MA2C70000F	DIODE	
D817	AU01ZV0	DIODE	
D818	MAZ32700LL	DIODE ZENER	
D819	B0BA01000046	DIODE ZENER	⚠
D822	B0AAGM000006	DIODE SWITCHING	
D825	SF5L60U-4115	DIODE GERMANIUM	⚠
D827	SF5LC30-4115	DIODE GERMANIUM	
D828	SF5LC30-4115	DIODE GERMANIUM	
D829	SF5LC30-4115	DIODE GERMANIUM	
D830	RL4ZLF-J6	DIODE	
D831	RL4ZLF-J6	DIODE	
D835	B0JAME000052	DIODE	
D837	MA3X152K0L	DIODE	
D870	B0JCME000025	DIODE	
D871	B0JCME000025	DIODE	
D876	B0JCME000025	DIODE	
D885	MA2062-BTP	DIODE	
D886	MA2120-ATP	DIODE	
D887	MA2062-BTP	DIODE	
D890	B0JCME000025	DIODE	
D891	MA2062-BTP	DIODE	
D895	MA2C165001VT	DIODE	
D896	MA3X152K0L	DIODE	
D902	MA2C18800E	DIODE	
D933	MA2C18800E	DIODE	
D953	B0ZAZ0000047	DIODE	
D962	MA2C18800E	DIODE	
D973	B0ZAZ0000047	DIODE	
D983	B0ZAZ0000047	DIODE	
D1502	B0HACW000001	DIODE	
D1503	MAZ30300LL	DIODE ZENER	⚠
D1504	B0HACW000001	DIODE	
D1505	MA2C0290BF	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D1506	MAZ30510HL	DIODE	⚠
D1507	MAZ30300LL	DIODE ZENER	
D1510	MAZ30330LL	DIODE ZENER	
D1599	MA3X152K0L	DIODE	
D2321	MA3X152K0L	DIODE	
D2323	MA3X152K0L	DIODE	
D2324	MA3X152K0L	DIODE	
D2802	B0EBKT000003	DIODE	⚠
D2806	MAZ41100MF	DIODE ZENER	
D2809	MA2C165001VT	DIODE	
D2810	EG01AF7	DIODE	
D2811	AG01ZV0	DIODE	
D2813	B0HBSM000034	DIODE	
D2814	AG01ZV0	DIODE	
D2815	MA3X152K0L	DIODE	
D2816	MAZ31500ML	DIODE ZENER	
D3001	MAZ31100ML	DIODE ZENER	
D3002	MAZ31100ML	DIODE ZENER	
D3003	MAZ31100ML	DIODE ZENER	
D3004	MAZ31100ML	DIODE ZENER	
D3005	MAZ31100ML	DIODE ZENER	
D3006	MAZ31100ML	DIODE ZENER	
D3007	MAZ31100ML	DIODE ZENER	
D3008	MAZ31100ML	DIODE ZENER	
D3009	MAZ31100ML	DIODE ZENER	
D3010	MAZ31100ML	DIODE ZENER	
D3011	MAZ31100ML	DIODE ZENER	
D3012	MAZ31100ML	DIODE ZENER	
D3013	MAZ31100ML	DIODE ZENER	
D3014	MAZ31100ML	DIODE ZENER	
D3015	MAZ31100ML	DIODE ZENER	
D3016	MAZ31100ML	DIODE ZENER	
D3017	MAZ31100ML	DIODE ZENER	
D3018	MAZ31100ML	DIODE ZENER	
D3019	MAZ31100ML	DIODE ZENER	
D3020	MAZ31100ML	DIODE ZENER	
D3030	MAZ31100ML	DIODE ZENER	
D3031	MAZ31100ML	DIODE ZENER	
D3035	MAZ31100ML	DIODE ZENER	
D3036	MAZ31100ML	DIODE ZENER	
D3037	MAZ30330LL	DIODE ZENER	
D7060	MA3X152K0L	DIODE	
FUSES			
F801	K5D632AD0002	FUSE 6.3A/125V	⚠
INTEGRATED CIRCUITS			
IC451	C1AA00000521	VERTICAL OUTPUT	
IC701	AN6914S	EW, HHS ADJ. OP-AMP	
IC801	AN8029	POWER SUPPLY	⚠
IC802	C0EAS0000025	MAIN REGULATOR	⚠
IC805	AN78M12LB	12V REGULATOR	
IC811	0N3171RLF	OPTO COUPLER	⚠
IC871	C0DAAZH00009	5V REGULATOR	

Ref. No.	Part No.	Part Name & Description	Remarks
IC872	SI-8090J	9V REGULATOR	
IC873	C0DAAZH00009	2.5V REGULATOR	
IC874	C0DAAZH00009	5V REGULATOR	
IC880	AN78N12-LB	12V REGULATOR	
IC1101	TVR2AJ173S	MAIN EEPROM	
IC1112	TVR2AJ174S	CONVERGENCE EEPROM	
IC1501	AN6562S-E1	EHT ADJ. OP-AMP	
IC2302	C1AA00000645	AUDIO AMPLIFIER	
IC2451	NJW1137MPTE1	BBE VIVA PROCESSOR	
IC2801	C0DACZH00003	20V REGULATOR (HOT)	⚠
IC2803	AN1431T-TA	SCR	
IC2804	0N3171RLF	OPTO COUPLER	⚠
IC2851	C0CAADH00003	7.7V REGULATOR	
IC7001	C5AA00000108	CONVERGENCE AMPLIFIER	
IC7002	C5AA00000108	CONVERGENCE AMPLIFIER	
		COILS	
L002	ELJPA330KF	CHIP INDUCTOR 33UH	
L003	ELJPA100KF	CHIP INDUCTOR 10UH	
L006	ELJPA100KF	CHIP INDUCTOR 10UH	
L301	ELEBD101KA	COIL 100UH	
L302	ELESN100JA	COIL PEAKING 10UH	
L303	ELESN6R8JA	COIL PEAKING 6.8UH	
L304	ELESN4R7JA	RADIAL INDUCTOR	
L331	ELESN100JA	COIL PEAKING 10UH	
L332	ELESN6R8JA	COIL PEAKING 6.8UH	
L333	G0C560KA0021	COIL PEAKING 56UH	
L334	ELESN4R7KA	COIL PEAKING 4.7UH	
L335	ELEBD101KA	COIL 100UH	
L337	G0C560KA0021	COIL PEAKING 56UH	
L361	ELEBD101KA	COIL 100UH	
L362	ELESN100JA	COIL PEAKING 10UH	
L363	ELESN150JA	COIL PEAKING 15UH	
L364	ELESN4R7JA	RADIAL INDUCTOR	
L500	TALL08TR82	MASTER COIL	
L501	EXCELSA35T	FERRITE BEAD	
L510	EXCELDR25V	FERRITE BEAD	
L511	EXCELDR25V	FERRITE BEAD	
L515	EXCELDR25V	FERRITE BEAD	
L516	EXCELDR25V	FERRITE BEAD	
L555	ELH5L718	COIL	
L701	ELESN100KA	COIL PEAKING 10UH	
L702	EXCELSA35T	FERRITE BEAD	
L703	ELC18B152L	FILTER	
L704	ELC18B151G	FILTER	
L801	ELF18D650M	COIL	⚠
L802	ELF21N035A	LINE FILTER	⚠
L805	EXCELDR25V	FERRITE BEAD	
L806	EXCELDR25V	FERRITE BEAD	
L808	EXCELDR35V	FERRITE BEAD	
L810	EXCELDR25V	FERRITE BEAD	
L811	EXCELDR25V	FERRITE BEAD	
L815	EXCELSA39E	FERRITE BEAD	
L816	EXCELSA39E	FERRITE BEAD	

[illegible]	[illegible]	[illegible]	

Ref. No.	Part No.	Part Name & Description	Remarks
L817	TALL08T680KA	COIL	
L819	EXCELDR35V	FERRITE BEAD	
L820	EXCELDR35V	FERRITE BEAD	
L821	EXCELDR35V	FERRITE BEAD	
L825	TALL08T330KA	COIL	
L826	TALL08T330KA	COIL	
L827	TALL08T330KA	COIL	
L851	TALL08T470KA	COIL	
L852	G0ZZ00001909	INT CKT	
L853	TALL08T220KA	COIL	
L854	EXCELDR35V	FERRITE BEAD	
L876	G0ZZ00001909	INT CKT	
L879	G0ZZ00001909	INT CKT	
L880	G0ZZ00001909	INT CKT	
L885	TALL08T470KA	COIL	
L886	TALL08T220KA	COIL	
L887	TALL08T220KA	COIL	
L888	TALL08T680KA	COIL	
L889	TALL08T470KA	COIL	
L892	EXCELDR35V	FERRITE BEAD	
L893	EXCELDR35V	FERRITE BEAD	
L894	EXCELDR35V	FERRITE BEAD	
L895	TALL08T220KA	COIL	
L901	EXCELSA35T	FERRITE BEAD	
L902	EXCELSA35T	FERRITE BEAD	
L903	EXCELSA35T	FERRITE BEAD	
L931	TALL08T100KA	COIL	
L933	EXCELSA35T	FERRITE BEAD	
L934	EXCELSA35T	FERRITE BEAD	
L935	EXCELSA35T	FERRITE BEAD	
L961	EXCELSA35T	FERRITE BEAD	
L962	EXCELSA35T	FERRITE BEAD	
L963	EXCELSA35T	FERRITE BEAD	
L1102	EXCELDR35V	FERRITE BEAD	
L1103	EXCELDR35V	FERRITE BEAD	
L2305	TALL08T330KA	COIL	
L2306	TALL08T330KA	COIL	
L2309	TALL08T100KA	COIL	
L2310	TALL08T100KA	COIL	
L2311	TALL08T100KA	COIL	
L2312	TALL08T100KA	COIL	
L2313	TALL08T100KA	COIL	
L2314	TALL08T100KA	COIL	
L2331	ELC12E390	COIL	
L2332	ELC12E390	COIL	
L2336	G0B800H00001	COIL	
L2337	G0B800H00001	COIL	
L2343	ELJPA100KF	CHIP INDUCTOR 10UH	
L2344	ELJPA100KF	CHIP INDUCTOR 10UH	
L2502	ELJPA100KF	CHIP INDUCTOR 10UH	
L2807	TALL08T330KA	COIL	
TRANSISTORS			
Q025	2SC3311ATA	TRANSISTOR	
Q026	2SD601ARTX	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
Q301	2SC1473ATA	TRANSISTOR	
Q302	2SC3526H	TRANSISTOR	
Q303	2SC1473ATA	TRANSISTOR	
Q331	2SC3526H	TRANSISTOR	
Q353	2SC3942LB	TRANSISTOR	
Q354	B1BAAN000025	TRANSISTOR	
Q355	B1BCAN000004	TRANSISTOR	
Q361	2SC3311ATA	TRANSISTOR	
Q362	2SC3311ATA	TRANSISTOR	
Q363	2SC3526H	TRANSISTOR	
Q364	2SA1309ATA	TRANSISTOR	
Q365	2SC3311ATA	TRANSISTOR	
Q366	2SC3311ATA	TRANSISTOR	
Q368	2SA1309ATA	TRANSISTOR	
Q373	2SC3942LB	TRANSISTOR	
Q374	B1BAAN000025	TRANSISTOR	
Q375	B1BCAN000004	TRANSISTOR	
Q393	2SC3942LB	TRANSISTOR	
Q394	B1BAAN000025	TRANSISTOR	
Q395	B1BCAN000004	TRANSISTOR	
Q406	2SD601ARTX	TRANSISTOR	
Q501	B1CEML000001	TRANSISTOR	
Q509	2SC1473QRTA	TRANSISTOR	
Q510	2SC1473QRTA	TRANSISTOR	
Q512	2SD601ARTX	TRANSISTOR	
Q513	2SD601ARTX	TRANSISTOR	
Q551	B1BAJW000001	TRANSISTOR	
Q606	2SD601ARTX	TRANSISTOR	
Q701	2SK2538000LB	TRANSISTOR	
Q801	2SK2917LB	TRANSISTOR	
Q802	2SD601ARTX	TRANSISTOR	
Q803	2SB709ARTX	TRANSISTOR	
Q854	2SA19610QAHW	TRANSISTOR	
Q901	2SB1321ARA	TRANSISTOR	
Q903	2SA720TA	TRANSISTOR	
Q904	2SD1992ARA	TRANSISTOR	
Q905	2SC1318ATA	TRANSISTOR	
Q906	2SC1318ATA	TRANSISTOR	
Q907	2SA720TA	TRANSISTOR	
Q931	2SC3311ATA	TRANSISTOR	
Q932	2SC3311ATA	TRANSISTOR	
Q933	2SC3311ATA	TRANSISTOR	
Q934	2SA720TA	TRANSISTOR	
Q935	2SC1318ATA	TRANSISTOR	
Q936	2SC1318ATA	TRANSISTOR	
Q937	2SA720TA	TRANSISTOR	
Q938	2SB1321ARA	TRANSISTOR	
Q941	2SD1992ARA	TRANSISTOR	
Q951	2SC3311ATA	TRANSISTOR	
Q952	2SC3311ATA	TRANSISTOR	
Q953	2SC3311ATA	TRANSISTOR	
Q955	2SA1248SRA	TRANSISTOR	
Q956	2SC3116SRA	TRANSISTOR	
Q957	2SA1248SRA	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
Q958	2SC3116SRA	TRANSISTOR	
Q959	2SA1248SRA	TRANSISTOR	
Q960	2SC3116SRA	TRANSISTOR	
Q961	2SB1321ARA	TRANSISTOR	
Q964	2SD1992ARA	TRANSISTOR	
Q965	2SA720TA	TRANSISTOR	
Q966	2SC1318ATA	TRANSISTOR	
Q967	2SC1318ATA	TRANSISTOR	
Q968	2SA720TA	TRANSISTOR	
Q1503	2SA1309ATA	TRANSISTOR	
Q1504	B1BAAV000003	TRANSISTOR	
Q1505	2SC3311ATA	TRANSISTOR	
Q2301	2SB709ARTX	TRANSISTOR	
Q2302	2SB709ARTX	TRANSISTOR	
Q2304	2SD601ARTX	TRANSISTOR	
Q2306	UN2215TX	TRANSISTOR	
Q2307	2SB709ARTX	TRANSISTOR	
Q2451	2SD601ARTX	TRANSISTOR	
Q2452	2SD601ARTX	TRANSISTOR	
Q2501	2SD601ARTX	TRANSISTOR	
Q2502	2SD601ARTX	TRANSISTOR	
Q2503	2SD601ARTX	TRANSISTOR	
Q2504	2SB709ARTX	TRANSISTOR	
Q2505	2SB709ARTX	TRANSISTOR	
Q2506	2SB709ARTX	TRANSISTOR	
Q2507	2SB709ARTX	TRANSISTOR	
Q2508	2SB709ARTX	TRANSISTOR	
Q2509	2SB709ARTX	TRANSISTOR	
Q2510	2SB709ARTX	TRANSISTOR	
Q2516	2SC3311ATA	TRANSISTOR	
Q2517	2SA1309ATA	TRANSISTOR	
Q2522	2SC3311ATA	TRANSISTOR	
Q2525	2SC3311ATA	TRANSISTOR	
Q2528	2SC3311ATA	TRANSISTOR	
Q2801	B1DGGD000001	TRANSISTOR	
Q2802	2SD601ARTX	TRANSISTOR	
Q2803	2SD601ARTX	TRANSISTOR	
Q3001	2SB710ATX	TRANSISTOR	
Q3002	2SD601ARTX	TRANSISTOR	
Q7006	2SD601ARTX	TRANSISTOR	
Q7007	2SD601ARTX	TRANSISTOR	
Q7060	2SB709ARTX	TRANSISTOR	
Q7061	2SD601ARTX	TRANSISTOR	
RELAYS			
RL801	K6B1ADA00010	RELAY	⚠
RL802	K6B1ADA00010	RELAY	⚠
RESISTORS			
R001	ERJ6GEYJ221V	RES M 220-J-1/10W	
R002	ERJ6GEYJ221V	RES M 220-J-1/10W	
R015	ERG1SJ273P	RES M 27K-J-1W	
R023	ERDS2TJ471T	RES C 470-J-1/4W	
R024	ERDS2TJ153T	RES C 15K-J-1/4W	
R025	ERDS2TJ473T	RES C 47K-J-1/4W	

Ref. No.	Part No.	Part Name & Description	Remarks
R027	ERJ6GEYJ220V	RES M 22-J-1/10W	
R072	ERDS2TJ101T	RES C 100-J-1/4W	
R073	ERDS2TJ471T	RES C 470-J-1/4W	
R080	ERDS2TJ222T	RES C 2.2K-J-1/4W	
R081	ERDS2TJ222T	RES C 2.2K-J-1/4W	
R082	ERDS2TJ332T	RES C 3.3K-J-1/4W	
R083	ERDS2TJ512T	RES C 5.1K-J-1/4W	
R084	ERDS2TJ912T	RES C 9.1K-J-1/4W	
R086	ERDS2TJ681T	RES C 680-J-1/4W	
R087	ERDS2TJ331T	RES C 330-J-1/4W	
R088	ERDS2TJ123T	RES C 12K-J-1/4W	
R301	ERDS1FJ394P	RES C 390K-J-1/2W	
R302	ERDS2TJ151T	RES C 150-J-1/4W	
R303	EROS2THF2200	RES M 220-f-1/4w	
R304	ERDS2TJ334T	RES C 330K-J-1/4W	
R305	EROS2THF2200	RES M 220-f-1/4w	
R306	EROS2THF4700	RES M 470-f-1/4w	
R307	ERDS2TJ220T	RES C 22-J-1/4W	
R308	ERDS2TJ334T	RES C 330K-J-1/4W	
R310	ERDS2TJ183T	RES C 18K-J-1/4W	
R311	ERDS2TJ470T	RES C 47-J-1/4W	
R312	ERG7ZJ272	RES M 2.7K-J-7W	
R313	ERDS1FJ103T	RES C 10K-J-1/2w	
R315	ERDS2TJ563T	RES C 56K-J-1/4W	
R316	ERDS2TJ821T	RES C 820-J-1/4W	
R319	ERG12SJ101P	RES M 100-J-1W	
R320	ERDS1FJ330P	RES C 33-J-1/2W	
R321	ERDS1FJ330P	RES C 33-J-1/2W	
R322	ERG12SJ101P	RES M 100-J-1W	
R325	ERDS2TJ473T	RES C 47K-J-1/4W	
R327	ERC12GK331D	RES C 330-K-1/2W	
R328	ERDS1TJ104T	RES C 100K-J-1/2W	
R331	EROS2THF2200	RES M 220-f-1/4w	
R332	ERDS2TJ151T	RES C 150-J-1/4W	
R333	EROS2THF2200	RES M 220-f-1/4w	
R334	ERDS2TJ220T	RES C 22-J-1/4W	
R335	EROS2THF4700	RES M 470-f-1/4w	
R337	ERDS1FJ103T	RES C 10K-J-1/2w	
R345	ERDS2TJ470T	RES C 47-J-1/4W	
R347	ERG7ZJ272	RES M 2.7K-J-7W	
R348	ERDS2TJ563T	RES C 56K-J-1/4W	
R349	ERDS2TJ821T	RES C 820-J-1/4W	
R350	ERG12SJ101P	RES M 100-J-1W	
R351	ERDS1FJ330P	RES C 33-J-1/2W	
R352	ERDS1FJ330P	RES C 33-J-1/2W	
R353	ERG12SJ101P	RES M 100-J-1W	
R354	ERDS2TJ473T	RES C 47K-J-1/4W	
R356	ERC12GK331D	RES C 330-K-1/2W	
R357	ERDS1TJ104T	RES C 100K-J-1/2W	
R361	EROS2THF1302	RES M 13k-f-1/4w	
R362	EROS2THF1002	RES M 10K-F-1/4W	
R363	ERDS2TJ220T	RES C 22-J-1/4W	
R364	ERDS2TJ102T	RES C 1K-J-1/4W	
R365	ERDS2TJ221T	RES C 220-J-1/4W	

Ref. No.	Part No.	Part Name & Description	Remarks
R366	ERDS2TJ151T	RES C 150-J-1/4W	
R367	EROS2THF2200	RES M 220-f-1/4w	
R368	EROS2THF2200	RES M 220-f-1/4w	
R369	ERDS2TJ472T	RES C 4.7K-J-1/4W	
R371	EROS2THF4700	RES M 470-f-1/4w	
R372	EROS2THF82R0	RES M 82.0-f-1/4w	
R374	ERDS1FJ103T	RES C 10K-J-1/2w	
R375	ERDS2TJ470T	RES C 47-J-1/4W	
R376	ERG7ZJ272	RES M 2.7K-J-7W	
R379	ERDS2TJ563T	RES C 56K-J-1/4W	
R380	ERDS2TJ821T	RES C 820-J-1/4W	
R383	ERG12SJ101P	RES M 100-J-1W	
R384	ERDS1FJ330P	RES C 33-J-1/2W	
R385	ERDS1FJ330P	RES C 33-J-1/2W	
R386	ERG12SJ101P	RES M 100-J-1W	
R389	ERDS2TJ473T	RES C 47K-J-1/4W	
R390	ERC12GK331D	RES C 330-K-1/2W	
R391	ERDS1TJ104T	RES C 100K-J-1/2W	
R392	EROS2THF8201	RES M 8.2K-F-1/4W	
R393	EROS2THF8201	RES M 8.2K-F-1/4W	
R394	ERDS2TJ102T	RES C 1K-J-1/4W	
R395	ERDS2TJ221T	RES C 220-J-1/4W	
R396	ERDS2TJ472T	RES C 4.7K-J-1/4W	
R397	EROS2THF1201	RES M 1.2k-f-1/4w	
R398	EROS2THF3300	RES M 330-f-1/4w	
R408	ERJ6GEYJ272V	RES M 2.7K-J-1/10W	
R409	ERDS2TJ563T	RES C 56K-J-1/4W	
R410	ERJ6GEYJ224V	RES M 220K-J-1/10W	
R411	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R412	ERJ6GEYJ682V	RES M 6.8K-J-1/10W	
R415	ERG3FJ331H	RES M 330-J-3W	
R422	ERJ6ENF1800V	RES M 180-F-1/10W	
R423	ERJ6ENF5601V	RES M 5.6K-F-1/10W	
R425	ERDS1FJ1R0T	RES C 1.0-J-1/2W	
R426	ERJ6ENF1502V	RES M 15K-F-1/10W	
R428	ERJ6ENF1002V	RES M 10K-F-1/10W	
R434	ERX12SJ1R8V	RES M 1.8-J-1/2W	
R435	ERX12SJ1R8V	RES M 1.8-J-1/2W	
R464	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R465	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R466	ERJ6GEYJ562V	RES M 5.6K-J-1/10W	
R470	ERDS2TJ331T	RES C 330-J-1/4W	
R471	ERDS2TJ331T	RES C 330-J-1/4W	
R472	ERDS2TJ331T	RES C 330-J-1/4W	
R501	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R502	ERJ6GEYJ680V	RES M 68-J-1/10W	
R503	ERG2FJ180H	RES M 18-J-2W	
R504	ERG3FJ271H	RES M 270-J-3W	
R505	ERG1SJ120P	RES M 12-J-1W	
R506	ERX1SJR47P	RES M .47-J-1W	
R512	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R513	ERDS2TJ471T	RES C 470-J-1/4W	
R514	EROS2THF5602	RES M 56K-F-1/4W	
R515	EROS2THF4752	RES M 47.5K-F-1/4W	

Ref. No.	Part No.	Part Name & Description	Remarks
R516	ERJ6GEYJ101V	RES M 100-J-1/10W	
R517	ERDS2TJ103T	RES C 10K-J-1/4W	
R518	ERX12SJR22V	RES M .22-J-1/2W	
R519	ERQ12HKR22P	RES F .22-K-1/2W	
R520	ERQ12HJ330P	RES F 33-J-1/2W	⚠
R521	EROS2THF2702	RES M 27k-f-1/4w	⚠
R522	EROS2THF7681	RES M 7.68k-f-1/4w	⚠
R523	ERDS2TJ275T	RES C 2.7MEG-J-1/4W	
R525	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R534	EROS2THF1203	RES M 120K-F-1/4W	
R535	ERDS2TJ392T	RES C 3.9K-J-1/4W	
R541	ERDS2TJ563T	RES C 56K-J-1/4W	
R550	EROS2THF1002	RES M 10K-F-1/4W	
R560	ERJ6GEYJ101V	RES M 100-J-1/10W	
R561	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R562	ERJ6GEYJ104V	RES M 100K-J-1/10W	
R621	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R622	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R624	ERJ6GEYJ101V	RES M 100-J-1/10W	
R643	ERJ6GEYJ101V	RES M 100-J-1/10W	
R653	ERDS2TJ101T	RES C 100-J-1/4W	
R654	ERDS2TJ184T	RES C 180K-J-1/4W	
R655	ERDS2TJ184T	RES C 180K-J-1/4W	
R704	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R706	ERDS1FJ680T	RES C 68-J-1/2W	
R708	ERF5AK4R7H	RES W 4.7-K-5W	
R805	ERDS2TJ101T	RES C 100-J-1/4W	
R808	ERX12SZJR12P	RES M .12-J-1/2W	
R809	ERJ6GEYJ225V	RES M 2.2M-J-1/10W	
R810	ERX12SZJR12P	RES M .12-J-1/2W	
R811	ERX12SZJR12P	RES M .12-J-1/2W	
R812	ERDS2TJ103T	RES C 10K-J-1/4W	
R813	ERDS1FJ561T	RES C 560-J-1/2W	
R814	ERDS2TJ4R7T	RES C 4.7-J-1/4W	
R815	ERJ6GEYJ301V	RES M 300-J-1/10W	
R816	ERDS2TJ471T	RES C 470-J-1/4W	
R817	ERJ6ENF2001V	RES M 2K-F-1/10W	
R818	ERDS1FJ100T	RES C 10-J-1/2W	
R820	ERDS1FJ470T	RES C 47-J-1/2W	
R822	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R832	ERD75TAJ825	RES C 8.2MEG-J-3/4W	⚠
R833	ERJ6GEYJ101V	RES M 100-J-1/10W	
R835	ERDS2TJ101T	RES C 100-J-1/4W	
R836	ERJ6GEYJ101V	RES M 100-J-1/10W	
R839	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R840	ERJ6GEYJ101V	RES M 100-J-1/10W	
R846	ERDS2TJ223T	RES C 22K-J-1/4W	
R847	ERDS2TJ272T	RES C 2.7K-J-1/4W	
R857	ERX1SJ1R0P	RES M 1.0-J-1W	
R858	ERX1SJ1R0P	RES M 1.0-J-1W	
R859	ERDS2TJ103T	RES C 10K-J-1/4W	
R860	ERDS1FJ222T	RES C 2200-J-1/2W	
R862	ERG3FJ333H	RES M 33K-J-3W	

Ref. No.	Part No.	Part Name & Description	Remarks
R863	ERJ6ENF3001V	RES M 3K-F-1/10W	
R865	ERJ6GEYJ153V	RES M 15K-J-1/10W	
R866	ERJ6GEYJ332V	RES M 3.3K-J-1/10W	
R867	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R888	ERJ6ENF1001V	RES M 1K-F-1/10W	
R889	ERJ6ENF1001V	RES M 1K-F-1/10W	
R893	ERJ6ENF1001V	RES M 1K-F-1/10W	
R895	ERJ6GEYJ100V	RES M 10-J-1/10W	
R896	ERJ6ENF1001V	RES M 1K-F-1/10W	
R897	ERJ6ENF3001V	RES M 3K-F-1/10W	
R901	ERDS2FJ122T	RES C 1.2K-J-1/2W	
R902	ERDS2TJ103T	RES C 10K-J-1/4W	
R903	ERDS2TJ683T	RES C 68K-J-1/4W	
R904	ERDS2TJ683T	RES C 68K-J-1/4W	
R905	ERDS2TJ103T	RES C 10K-J-1/4W	
R906	ERDS2TJ122T	RES C 1.2K-J-1/4W	
R907	ERDS1FVJ390T	RES C 39-J-1/2W	
R908	ERDS1FVJ390T	RES C 39-J-1/2W	
R909	ERDS1FVJ8R2T	RES C 8.2-J-1/2W	
R910	ERDS2TJ8R2T	RES C 8.2-J-1/4W	
R911	ERG3SJS221H	RES M 220-J-3W	
R912	ERDS2TJ681T	RES C 680-J-1/4W	
R913	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R914	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R915	ERQ14AJ220P	RES F 22-J-1/4W	
R916	ERQ14AJ220P	RES F 22-J-1/4W	
R917	ERQ14AJ100P	RES F 10-J-1/4W	
R925	ERDS2TJ151T	RES C 150-J-1/4W	
R926	ERDS2TJ151T	RES C 150-J-1/4W	
R928	ERQ14AJ220P	RES F 22-J-1/4W	
R929	ERDS2TJ101T	RES C 100-J-1/4W	
R930	ERJ6GEYJ100V	RES M 10-J-1/10W	
R930	ERJ6GEYJ330V	RES M 33-J-1/10W	
R931	ERJ6GEYJ101V	RES M 100-J-1/10W	
R932	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R933	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R934	ERJ6GEYJ153V	RES M 15K-J-1/10W	
R935	ERJ6GEYJ822V	RES M 8.2K-J-1/10W	
R936	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R937	ERJ6GEYJ471V	RES M 470-J-1/10W	
R938	ERJ6GEYJ391V	RES M 390-J-1/10W	
R939	ERJ6GEYJ470V	RES M 47-J-1/10W	
R942	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R943	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R944	ERDS2TJ471T	RES C 470-J-1/4W	
R945	ERDS2TJ471T	RES C 470-J-1/4W	
R946	ERQ14AJ100P	RES F 10-J-1/4W	
R947	ERQ14AJ220P	RES F 22-J-1/4W	
R948	ERDS2FJ122T	RES C 1.2K-J-1/2W	
R949	ERDS2TJ103T	RES C 10K-J-1/4W	
R950	ERDS2TJ683T	RES C 68K-J-1/4W	
R951	ERDS2TJ683T	RES C 68K-J-1/4W	
R952	ERDS2TJ103T	RES C 10K-J-1/4W	
R953	ERDS2TJ122T	RES C 1.2K-J-1/4W	

Ref. No.	Part No.	Part Name & Description	Remarks
R954	ERDS1FVJ390T	RES C 39-J-1/2W	
R955	ERDS1FVJ390T	RES C 39-J-1/2W	
R956	ERDS1FVJ8R2T	RES C 8.2-J-1/2W	
R957	ERDS2TJ8R2T	RES C 8.2-J-1/4W	
R958	ERG3SJS221H	RES M 220-J-3W	
R959	ERDS2TJ471T	RES C 470-J-1/4W	
R961	ERDS2FJ122T	RES C 1.2K-J-1/2W	
R962	ERDS2TJ103T	RES C 10K-J-1/4W	
R963	ERDS2TJ683T	RES C 68K-J-1/4W	
R964	ERDS2TJ683T	RES C 68K-J-1/4W	
R965	ERDS2TJ103T	RES C 10K-J-1/4W	
R966	ERDS2TJ122T	RES C 1.2K-J-1/4W	
R967	ERDS1FVJ390T	RES C 39-J-1/2W	
R968	ERDS1FVJ390T	RES C 39-J-1/2W	
R969	ERDS1FVJ8R2T	RES C 8.2-J-1/2W	
R970	ERDS2TJ8R2T	RES C 8.2-J-1/4W	
R971	ERG3SJS221H	RES M 220-J-3W	
R972	ERDS2TJ681T	RES C 680-J-1/4W	
R973	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R974	ERDS1FVJ152T	RES C 1.5K-J-1/2W	
R975	ERQ14AJ100P	RES F 10-J-1/4W	
R976	ERQ14AJ220P	RES F 22-J-1/4W	
R978	ERQ14AJ220P	RES F 22-J-1/4W	
R1502	ERJ6GEYJ222V	RES M 2.2K-J-1/10W	
R1503	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1504	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1505	ERDS2TJ102T	RES C 1K-J-1/4W	
R1506	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1507	ERG3SJD152L	RES M 1.5K-J-3W	
R1508	ERJ6GEYJ152V	RES M 1.5K-J-1/10W	
R1509	ERDS2TJ102T	RES C 1K-J-1/4W	
R1510	ERG2SJD333L	RES M 33K-J-2W	
R1511	ERG2SJD333L	RES M 33K-J-2W	
R1512	ERJ6ENF2201V	RES M 2.2K-F-1/10W	
R1514	ERG2SJD333L	RES M 33K-J-2W	
R1515	ERJ6ENF1001V	RES M 1K-F-1/10W	
R1516	ERJ6GEYJ101V	RES M 100-J-1/10W	
R1517	ERJ6ENF3571V	RES M 3.57K-F-1/10W	
R1518	ERG2SJD333L	RES M 33K-J-2W	
R1519	ERDS2TJ101T	RES C 100-J-1/4W	
R1520	ERDS2TJ221T	RES C 220-J-1/4W	
R1521	EROS2THF1500	RES M 150-F-1/4W	
R1522	ERC12GK103D	RES C 10K-K-1/2W	
R1523	ERDS2TJ104T	RES C 100K-J-1/4W	
R1524	EROS2THF1401	RES M 1.4K-F-1/4W	
R1527	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R1528	ERDS2TJ332T	RES C 3.3K-J-1/4W	
R1529	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R1532	ERJ6ENF2201V	RES M 2.2K-F-1/10W	
R1542	ERG2SJD333L	RES M 33K-J-2W	
R1544	ERJ6GEYJ471V	RES M 470-J-1/10W	
R1546	ERJ6GEYJ221V	RES M 220-J-1/10W	
R1599	ERJ6ENF9761V	RES M 9760-F-1/10W	
R2222	ERDS2TJ220T	RES C 22-J-1/4W	

Ref. No.	Part No.	Part Name & Description	Remarks
R2223	ERDS2TJ220T	RES C 22-J-1/4W	
R2224	ERDS2TJ220T	RES C 22-J-1/4W	
R2225	ERDS2TJ220T	RES C 22-J-1/4W	
R2226	ERDS2TJ220T	RES C 22-J-1/4W	
R2227	ERDS2TJ220T	RES C 22-J-1/4W	
R2228	ERDS2TJ220T	RES C 22-J-1/4W	
R2229	ERDS2TJ220T	RES C 22-J-1/4W	
R2230	ERDS2TJ220T	RES C 22-J-1/4W	
R2231	ERDS2TJ220T	RES C 22-J-1/4W	
R2232	ERDS2TJ220T	RES C 22-J-1/4W	
R2233	ERDS2TJ220T	RES C 22-J-1/4W	
R2244	ERDS2TJ220T	RES C 22-J-1/4W	
R2301	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2302	ERJ6GEYJ392V	RES M 3.9K-J-1/10W	
R2303	ERJ6GEYJ271V	RES M 270-J-1/10W	
R2304	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2305	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2308	ERJ6GEYJ183V	RES M 18K-J-1/10W	
R2313	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2314	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2315	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2316	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2324	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2325	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2326	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2327	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2328	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R2329	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2332	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2334	ERJ6ENF1501V	RES M 1.5K-F-1/10W	
R2335	ERJ6ENF1501V	RES M 1.5K-F-1/10W	
R2336	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2337	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2339	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2342	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2345	ERJ6GEYJ273V	RES M 27K-J-1/10W	
R2346	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2348	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2349	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2351	ERJ6GEYJ473V	RES M 47K-J-1/10W	
R2352	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2353	ERJ6ENF4701V	RES M 4.7K-F-1/10W	
R2354	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2355	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2356	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2357	ERJ6ENF1303V	RES M 130K-F-1/10W	
R2358	ERJ6GEYJ223V	RES M 22K-J-1/10W	
R2359	ERJ6GEYJ683V	RES M 68K-J-1/10W	
R2360	ERJ6ENF4701V	RES M 4.7K-F-1/10W	
R2361	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2362	ERJ12YJ101U	RES M 100-J-1/2W	
R2363	ERJ6ENF5232V	RES M 5.32K-F-1/10W	
R2364	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2365	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	

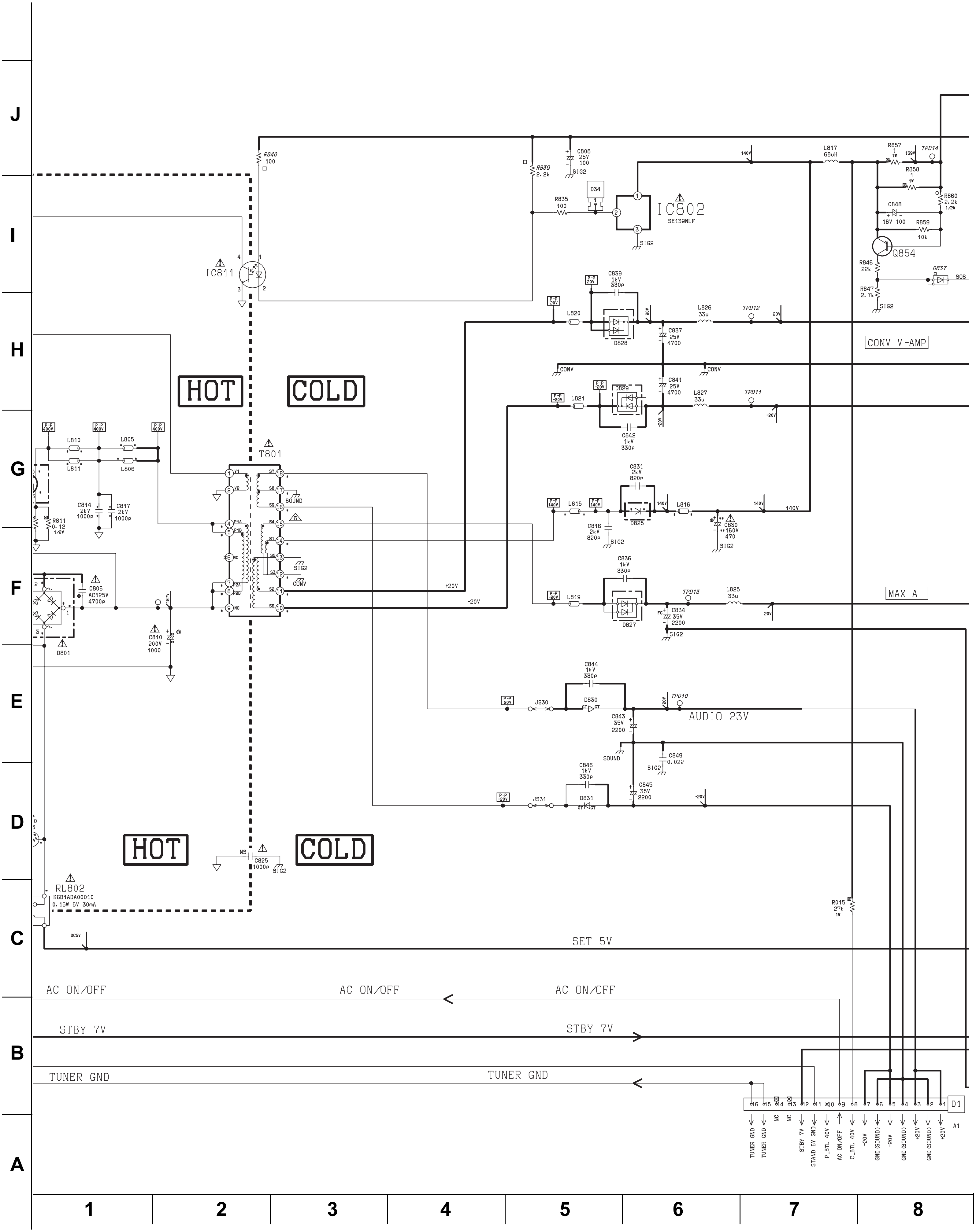
Ref. No.	Part No.	Part Name & Description	Remarks
R2366	ERJ6ENF1202V	RES.M 1.2K-F-1/10W	
R2367	ERJ12YJ101U	RES M 100-J-1/2W	
R2368	ERJ6ENF5232V	RES M 5.32K-F-1/10W	
R2371	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2372	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2373	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2374	ERJ6GEYJ220V	RES M 22-J-1/10W	
R2375	ERJ6GEYJ220V	RES M 22-J-1/10W	
R2376	ERDS2TJ220T	RES C 22-J-1/4W	
R2377	ERDS2TJ220T	RES C 22-J-1/4W	
R2378	ERDS2TJ220T	RES C 22-J-1/4W	
R2379	ERDS2TJ220T	RES C 22-J-1/4W	
R2380	ERDS2TJ220T	RES C 22-J-1/4W	
R2381	ERDS2TJ220T	RES C 22-J-1/4W	
R2386	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2402	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2407	ERDS2TJ220T	RES C 22-J-1/4W	
R2408	ERDS2TJ220T	RES C 22-J-1/4W	
R2409	ERDS2TJ220T	RES C 22-J-1/4W	
R2410	ERDS2TJ220T	RES C 22-J-1/4W	
R2411	ERDS2TJ220T	RES C 22-J-1/4W	
R2412	ERDS2TJ220T	RES C 22-J-1/4W	
R2413	ERDS2TJ220T	RES C 22-J-1/4W	
R2414	ERDS2TJ220T	RES C 22-J-1/4W	
R2419	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2420	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2421	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2422	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2423	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2424	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2425	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2426	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2451	ERJ6GEYJ681V	RES M 680-J-1/10W	
R2452	ERJ6GEYJ681V	RES M 680-J-1/10W	
R2456	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2457	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2459	ERJ6GEYJ123V	RES M 12K-J-1/10W	
R2460	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2461	ERJ6GEYJ101V	RES M 100-J-1/10W	
R2501	ERJ6ENF2700V	RES M 270-F-1/10W	
R2502	ERJ6ENF4700V	RES M 470-F-1/10W	
R2503	ERJ6ENF4700V	RES M 470-F-1/10W	
R2504	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2505	ERJ6ENF33R0V	RES M 33.OK-F-1/10W	
R2506	ERJ6ENF33R0V	RES M 33.OK-F-1/10W	
R2507	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2508	ERJ6ENF4700V	RES M 470-F-1/10W	
R2509	ERJ6ENF2700V	RES M 270-F-1/10W	
R2510	ERJ6ENF4700V	RES M 470-F-1/10W	
R2511	ERJ6ENF2700V	RES M 270-F-1/10W	
R2512	ERJ6ENF4700V	RES M 470-F-1/10W	
R2513	ERJ6ENF33R0V	RES M 33.OK-F-1/10W	
R2514	ERJ6ENF4700V	RES M 470-F-1/10W	
R2515	ERJ6GEYJ221V	RES M 220-J-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R2516	ERJ6GEYJ470V	RES M 47-J-1/10W	
R2517	ERDS2TJ182T	RES C 1.8K-J-1/4W	
R2518	ERDS2TJ330T	RES C 33-J-1/4W	
R2519	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2520	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2537	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2538	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2539	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2541	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2542	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2543	ERJ6GEYJ122V	RES M 1.2K-J-1/10W	
R2568	ERJ6ENF6801V	RES M 6.8K-F-1/10W	
R2569	ERJ6ENF8201V	RES M 8.2K-F-1/10W	
R2570	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2571	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2573	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2576	ERJ6GEYJ181V	RES M 180-J-1/10W	
R2578	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2580	ERJ6GEYJ221V	RES M 220-J-1/10W	
R2583	ERJ6GEYJ181V	RES M 180-J-1/10W	
R2584	ERJ6GEYJ100V	RES M 10-J-1/10W	
R2590	ERJ6GEYJ181V	RES M 180-J-1/10W	
R2801	ERDS2TJ223T	RES C 22K-J-1/4W	
R2802	EROS2THF1502	RES M 15.0k-f-1/4w	
R2803	ERF2AK5R6	RES M 5.6-K-2W	
R2804	ERG2FJ393H	RES M 39K-J-2W	
R2806	ERDS2TJ184T	RES C 180K-J-1/4W	
R2807	ERDS2TJ102T	RES C 1K-J-1/4W	
R2808	ERDS2TJ102T	RES C 1K-J-1/4W	
R2810	ERDS2TJ823T	RES C 82K-J-1/4W	
R2811	EROS2THF7151	RES M 7.15K-F-1/4W	
R2813	EROS2THF2201	RES M 2.2k-f-1/4w	
R2814	ERG1FJS102E	RES M 1K-J-1W	
R2816	ERC12GK825C	RES C 820MEG-K-1/8W	
R2850	ERJ6GEYJ472V	RES M 4.7K-J-1/10W	
R2851	ERJ6ENF1001V	RES M 1K-F-1/10W	
R2852	ERJ6ENF4530V	RES M 453-F-1/10W	
R2853	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2854	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2855	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2856	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R2858	ERDS2TJ272T	RES C 2.7K-J-1/4W	
R2859	ERJ6GEYJ102V	RES M 1K-J-1/10W	
R2860	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3004	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3008	ERJ6ENF75R0V	RES M 75.0-F-1/10W	
R3010	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3011	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3013	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3014	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3015	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3016	ERJ6GEYJ184V	RES M 180K-J-1/10W	
R3024	ERJ6GEYJ103V	RES M 10K-J-1/10W	
R3026	ERJ6GEYJ103V	RES M 10K-J-1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R3028	**ERJ6GEYJ184V**	**RES M 180K-J-1/10W**	
R3029	**ERJ6GEYJ184V**	**RES M 180K-J-1/10W**	
R3035	**ERJ6GEYJ184V**	**RES M 180K-J-1/10W**	
R3036	**ERJ6GEYJ184V**	**RES M 180K-J-1/10W**	
R3044	**ERJ6GEYJ222V**	**RES M 2.2K-J-1/10W**	
R3045	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R3046	**ERJ6GEYJ222V**	**RES M 2.2K-J-1/10W**	
R3047	**ERJ6GEYJ102V**	**RES M 1K-J-1/10W**	
R3048	**ERJ6GEYJ152V**	**RES M 1.5K-J-1/10W**	
R3049	**ERJ6GEYJ104V**	**RES M 100K-J-1/10W**	
R7001	**ERG2FJ820H**	**RES M 82-J-2W**	
R7002	**ERG2FJ121H**	**RES M 120-J-2W**	
R7003	**ERG2FJ820H**	**RES M 82-J-2W**	
R7004	**ERG2FJ121H**	**RES M 120-J-2W**	
R7005	**ERG2FJ820H**	**RES M 82-J-2W**	
R7006	**ERG2FJ121H**	**RES M 120-J-2W**	
R7011	**ERX2FJ2R2H**	**RES M 2.2-J-2W**	
R7012	**ERX2FJ2R2H**	**RES M 2.2-J-2W**	
R7013	**ERX2FJ2R2H**	**RES M 2.2-J-2W**	
R7014	**ERX2FJ2R2H**	**RES M 2.2-J-2W**	
R7015	**ERX2FJ2R2H**	**RES M 2.2-J-2W**	
R7016	**ERX2FJ2R2H**	**RES M 2.2-J-2W**	
R7023	**ERJ6GEYJ273V**	**RES M 27K-J-1/10W**	
R7024	**ERJ6GEYJ472V**	**RES M 4.7K-J-1/10W**	
R7026	**ERJ6GEYJ222V**	**RES M 2.2K-J-1/10W**	
R7027	**ERJ6GEYJ332V**	**RES M 3.3K-J-1/10W**	
R7029	**ERJ6GEYJ332V**	**RES M 3.3K-J-1/10W**	
R7030	**ERJ6GEYJ222V**	**RES M 2.2K-J-1/10W**	
R7031	**ERJ6GEYJ222V**	**RES M 2.2K-J-1/10W**	
R7032	**ERJ6GEYJ332V**	**RES M 3.3K-J-1/10W**	
R7034	**ERJ6GEYJ273V**	**RES M 27K-J-1/10W**	
R7035	**ERJ6GEYJ472V**	**RES M 4.7K-J-1/10W**	
R7036	**ERJ6GEYJ222V**	**RES M 2.2K-J-1/10W**	
R7037	**ERJ6GEYJ222V**	**RES M 2.2K-J-1/10W**	
R7038	**ERJ6GEYJ222V**	**RES M 2.2K-J-1/10W**	
R7040	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R7041	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R7045	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R7046	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R7047	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R7048	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R7052	**ERJ6GEYJ332V**	**RES M 3.3K-J-1/10W**	
R7055	**ERJ6GEYJ332V**	**RES M 3.3K-J-1/10W**	
R7058	**ERJ6GEYJ332V**	**RES M 3.3K-J-1/10W**	
R7059	**ERJ6GEYJ104V**	**RES M 100K-J-1/10W**	
R7060	**ERX1SJR27P**	**RES M .27-J-1W**	
R7061	**ERJ6GEYJ102V**	**RES M 1K-J-1/10W**	
R7062	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R7063	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R7064	**ERJ6GEYJ103V**	**RES M 10K-J-1/10W**	
R7065	**ERJ6GEYJ102V**	**RES M 1K-J-1/10W**	
R7066	**ERX1SJR27P**	**RES M .27-J-1W**	
		SWITCHES	
S010	**EVQPBD05R**	**SWITCH**	

Ref. No.	Part No.	Part Name & Description	Remarks
S011	EVQPBD05R	SWITCH	
S012	EVQPBD05R	SWITCH	
S013	EVQPBD05R	SWITCH	
S014	EVQPBD05R	SWITCH	
S015	EVQPBD05R	SWITCH	
S016	EVQPBD05R	SWITCH	
S017	EVQPBD05R	SWITCH	
TRANSFORMERS			
T501	ETH19K204AZ	TRANSFORMER / PT-47WXD63G	
T501	ETH19K204AZ	TRANSFORMER / PT-53WXD63G	
T551	KFT7AA334F1	FLYBACK TRANSFORMER	⚠
T801	ETS42AD495AD	TRANSFORMER	⚠
OTHERS			
TNR001	ENG36620G	TUNER	⚠
TNR8000	ENGE6111D	TUNER (DT-BOARD)	⚠
M001	TSX2AA0381	A/C LINE CORD	⚠
1	TXFCRT27GSER	CRT (BLUE)	
	TXFCRT28GSER	CRT (GREEN)	
	TXFCRT29GSER	CRT (RED)	
M002	K3B10CA00006	CRT SOCKET	⚠
2	KDY2ASF83F	DEFLECTION YOKE	⚠
M003	TXF3A01ECV	DAG GND	
3	TKG2AF020-1	A/B LENS / PT-47WXD63G	
	TKG2AF021-1	A/B LENS / PT-53WXD63G	
4	TKG2AA50091	MIRROR GLASS / PT-47WXD63G	
	TKG2AA50111	MIRROR GLASS / PT-53WXD63G	
5	TMW2AX0041B	MIRROR BRACKET (SIDE)	
6	TMW2AX0161	MIRROR BRACKET (TOP)	
7	TKG2AD00071	PROTECTIVE SCREEN PANEL / PT-47WXD63G	
	TKG2AD00091	PROTECTIVE SCREEN PANEL / PT-53WXD63G	
8	TKG2AH50381	LENTICULAR SCREEN / PT-53WXD63G	
	TKG2AH50461	LENTICULAR SCREEN / PT-47WXD63G	
9	TKG2AH50611	FRESNEL SCREEN / PT-53WXD63G	
	TKG2AH50681	FRESNEL SCREEN / PT-47WXD63G	
10	TMW2AX0131	SCREEN BRACKET / PT-47WXD63G	
	TMW2AX0171	SCREEN BRACKET / PT-53WXD63G	
11	TMW2AX0181	CORNER BRACKET / PT-53WXD63G	
12	TKU2AC2601S	BACK CABINET / PT-53WXD63G	
	TKU2AC2201S	BACK CABINET / PT-47WXD63G	
13	TKD2AX0324S	CABINET FRONT BOARD	
14	TKY2AA3003S	FRONT CABINET / PT-47WXD63G	
	TKY2AA3405AS	FRONT CABINET / PT-53WXD63G	
15	TKB2AA0174S	WOOD CABINET / PT-47WXD63G	
	TKB2AA0203S	WOOD CABINET / PT-53WXD63G	
M004	TBL2AH30071	CASTER	
16	TKD2AX2572S	INNER BARRIER BOARD	
17	TKU2AA03901	LOWER BACK COVER	
18	TAS2AA0022	SPEAKER (TWEETER) / PT-47WXD63G	
	EASJ6PH05A3	SPEAKER (TWEETER) / PT-53WXD63G	
19	TAS2AA0027	SPEAKER (WOOFER) / PT-47WXD63G	
	EAST14PL31A6	SPEAKER (WOOFER) / PT-53WXD63G	
20	TKP2AA0626S	SPEAKER GRILLE	

Ref. No.	Part No.	Part Name & Description	Remarks
21	TBM2AA0012	PANASONIC BADGE	
22	KFT7CP336F	DISTRIBUTOR	⚠
23	D9ZZ00000079	FOCUS PACK	⚠
24	UDQFSEH58F	FAN	
25	TXFKP20GSER	REAR BRACKET	
26	TKD2AX1857S	FRONT PANEL	
27	TXFKP19GSER	DOOR PANEL	
28	TXFKP18GSER	CONTROL PANEL	
29	TBX2AA2801G	BUTTON KEYPAD	
30	TKP2AA0921	LED PANEL	
31	TEK6935	LATCH	
M005	ENPE633	SPLITTER	
M006	TMM2AE10171	GROMMET SQUARE	
JG1	K1NA68B00035	PC-BOARD CONNECTOR	
JG2	K1NA12B00002	SD-CARD CONNECTOR	
JK1001	TJB2AA0482	FRONT A/V TERMINAL	
JK3001	TJB2AA0251	REAR A/V TERMINAL 12 PIN	
JK3002	TJB2AA0241	REAR A/V TERMINAL 10 PIN	
JK5001	K1FA119E0001	HDMI CONNECTOR	
JK5002	TJB2AA0411	AUDIO IN TERMINAL 2 PIN	
JK8002	K1NA68B00036	POD CONNECTOR	
JK8003	K1NA12E00001	SD SERVICE CARD CONNECTOR	
OTHER ACCESORIES			
M007	TQB2AA0474	OWNERS MANUAL	
M008	EUR7627Z10	REMOTE CONTROL	
M009	UR76EC2703A	REMOTE CONTROL BATTERY COVER	


HOT
COLD
HOT
COLD
T801
IC811
IC802
SE139NLF
D34
Q854
RL802
K6B1ADA00010
0.15W 5V 30mA
D801
C806
AC125V
4700p
C810
200V
1000
R811
0.12
1/2W
L810
L811
L805
L806
C814
2kV
1000p
C817
2kV
1000p
R840
100
R839
2.2k
C808
25V
100
R835
100
L817
68uH
R857
R858
1
1W
R860
2.2k
1/2W
C848
16V 100
R859
10k
R846
22k
R847
2.7k
D837
SOS
TPD14
TPD12
TPD11
TPD13
TPD10
C839
1kV
330p
L820
D828
L826
33u
C837
25V
4700
CONV V-AMP
CONV
C841
25V
4700
D829
L821
L827
33u
C842
1kV
330p
C831
2kV
820p
L815
D825
L816
C816
2kV
820p
C830
160V
470
140V
C836
1kV
330p
L819
D827
L825
33u
C834
35V
2200
MAX A
C844
1kV
330p
JS30
D830
C843
35V
2200
AUDIO 23V
C849
0.022
C846
1kV
330p
JS31
D831
C845
35V
2200
SOUND
SIG2
NS
C825
1000p
R015
27k
1W
DC5V
SET 5V
AC ON/OFF
STBY 7V
TUNER GND
D1
A1
+20V
-20V
187V
P-P 400V
P-P 20V
P-P -20V
P-P 140V
TUNER GND
TUNER GND
NC
NC
STBY 7V
STAND BY GND
P_BTL 40V
AC ON/OFF
C_BTL 40V
-20V
GND (SOUND)
-20V
GND (SOUND)
+20V
GND (SOUND)
+20V
J
I
H
G
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E
D
C
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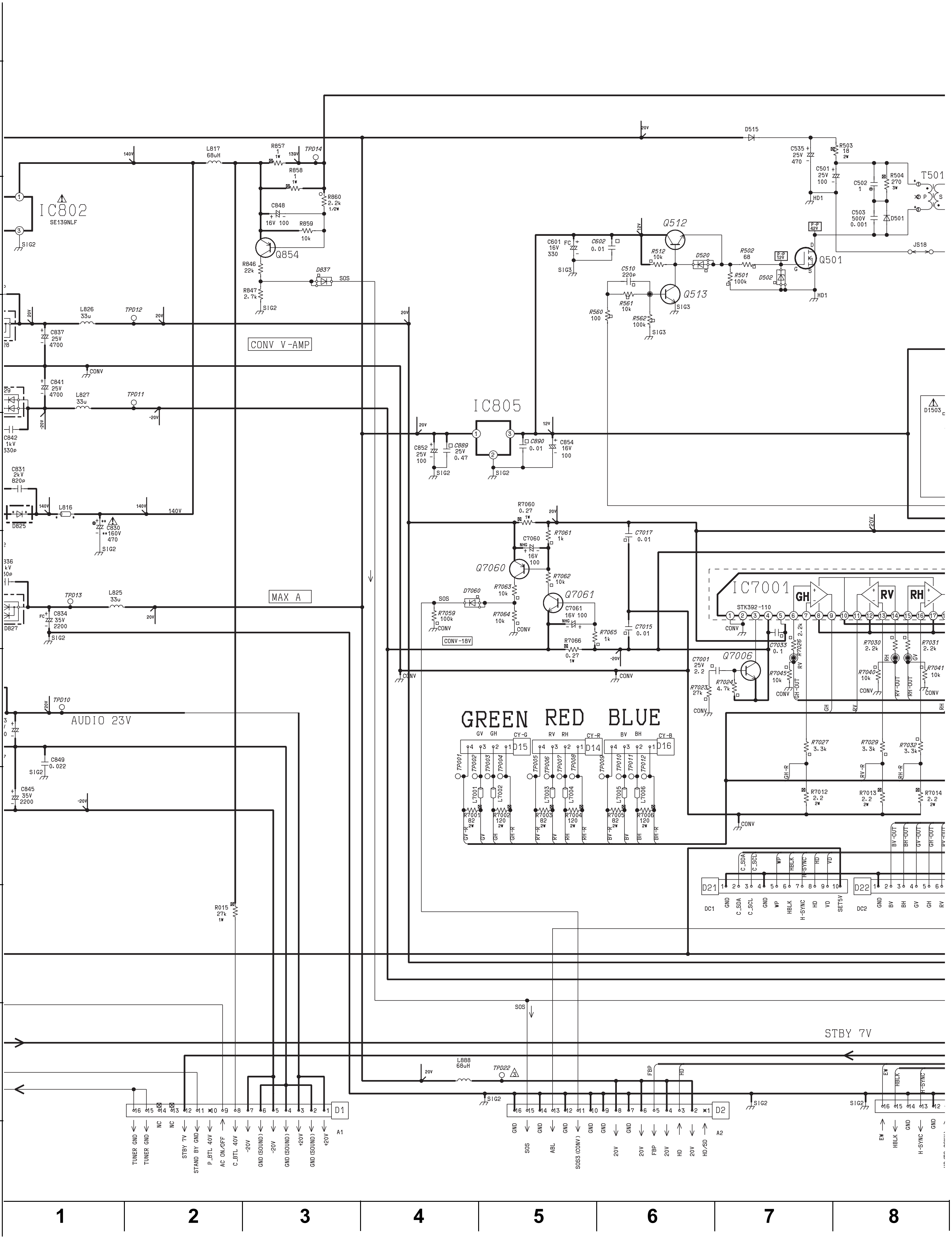
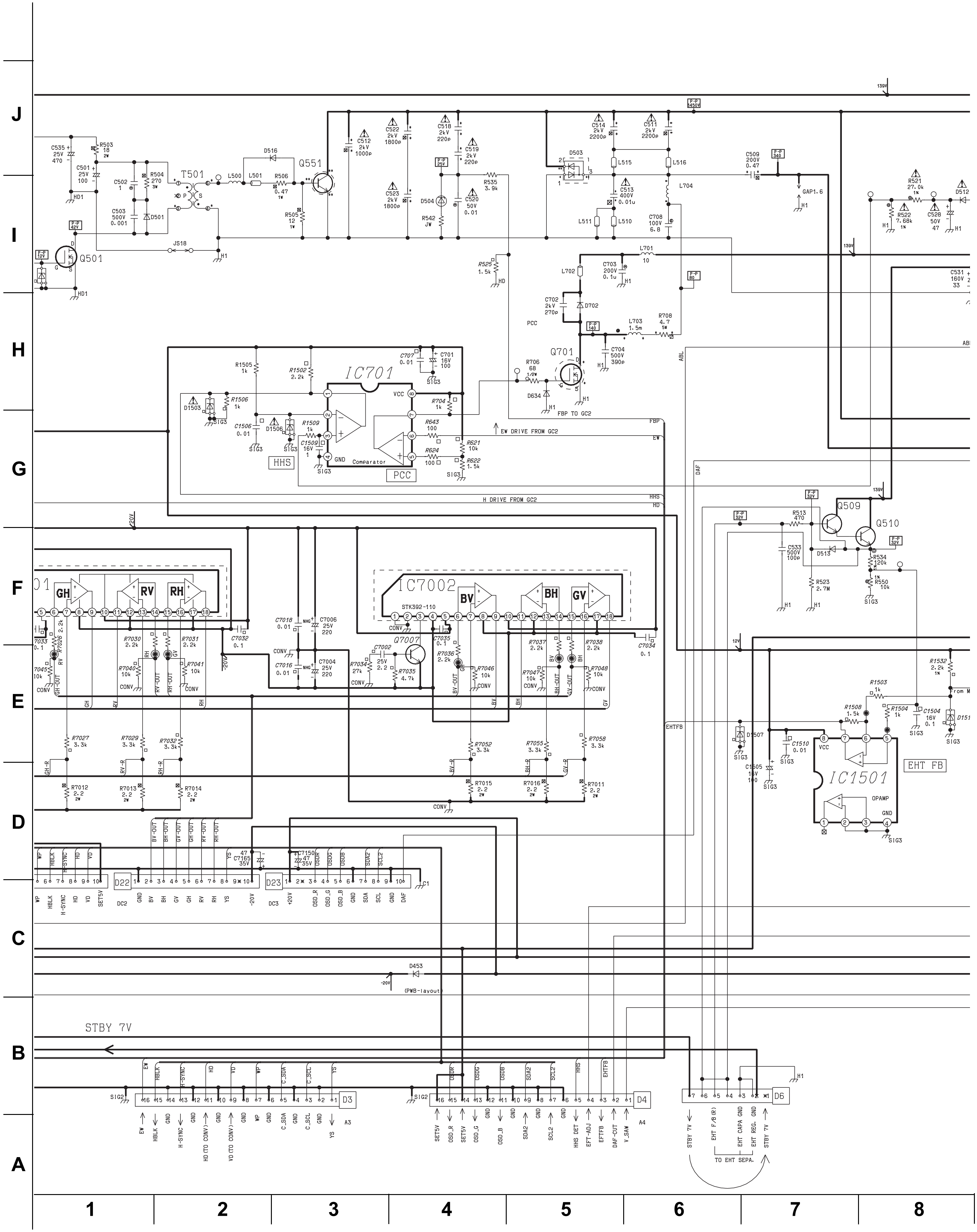
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IC802
SE139NLF
SIG2
140V
L817
68uH
R857
1
1W
TPD14
139V
R858
1
1W
R860
2.2k
1/2W
C848
16V 100
R859
10k
Q854
R846
22k
R847
2.7k
D837
SOS
L826
33u
TPD12
20V
C837
25V
4700
CONV V-AMP
CONV
C841
25V
4700
L827
33u
TPD11
-20V
C842
1kV
330p
C831
2kV
820p
L816
140V
D825
C830
160V
470
L825
33u
TPD13
C834
35V
2200
D827
MAX A
TPD10
AUDIO 23V
C849
0.022
C845
35V
2200
R015
27k
1W
D515
C535
25V
470
R503
18
2W
C501
25V
100
C502
1
R504
270
3W
T501
C503
500V
0.001
D501
HD1
Q512
R512
10k
D520
R502
68
Q501
R501
100k
D502
C510
220p
R561
10k
Q513
SIG3
R560
100
R562
100k
C601
16V
330
C602
0.01
JS18
IC805
C852
25V
100
C889
25V
0.47
C890
0.01
C854
16V
100
12V
D1503
R7060
0.27
1W
R7061
1k
C7017
0.01
C7060
16V
100
Q7060
R7062
10k
Q7061
R7063
10k
D7060
R7059
100k
R7064
10k
CONV-18V
C7061
16V 100
R7065
1k
C7015
0.01
R7066
0.27
1W
IC7001
STK392-110
GH
RV
RH
C7033
0.1
R7026
2.2k
Q7006
C7001
25V
2.2
R7024
4.7k
R7023
27k
R7045
10k
R7030
2.2k
R7040
10k
R7031
2.2k
R7041
10k
GREEN RED BLUE
D15
CY-G
D14
CY-R
D16
CY-B
TP001
TP002
TP003
TP004
TP005
TP006
TP007
TP008
TP009
TP010
TP011
TP012
L7001
L7002
L7003
L7004
L7005
L7006
R7001
82
R7002
120
R7003
82
R7004
120
R7005
82
R7006
120
R7027
3.3k
R7029
3.3k
R7032
3.3k
R7012
2.2
2W
R7013
2.2
2W
R7014
2.2
2W
D21
DC1
GND
C_SDA
C_SCL
GND
WP
HBLK
H-SYNC
HD
VD
SET5V
D22
DC2
GND
BV
BH
GV
GH
RV
STBY 7V
L888
68uH
TPD22
SOS
D1
A1
TUNER GND
TUNER GND
NC
NC
STBY 7V
STAND BY GND
P_BTL 40V
AC ON/OFF
C_BTL 40V
-20V
GND (SOUND)
-20V
GND (SOUND)
+20V
GND (SOUND)
+20V
D2
A2
GND
SOS
GND
ABL
SOS3 (CONV)
GND
GND
20V
GND
20V
FBP
20V
HD
20V
HD/SD
EW
HBLK
GND
H-SYNC


J
I
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D
C
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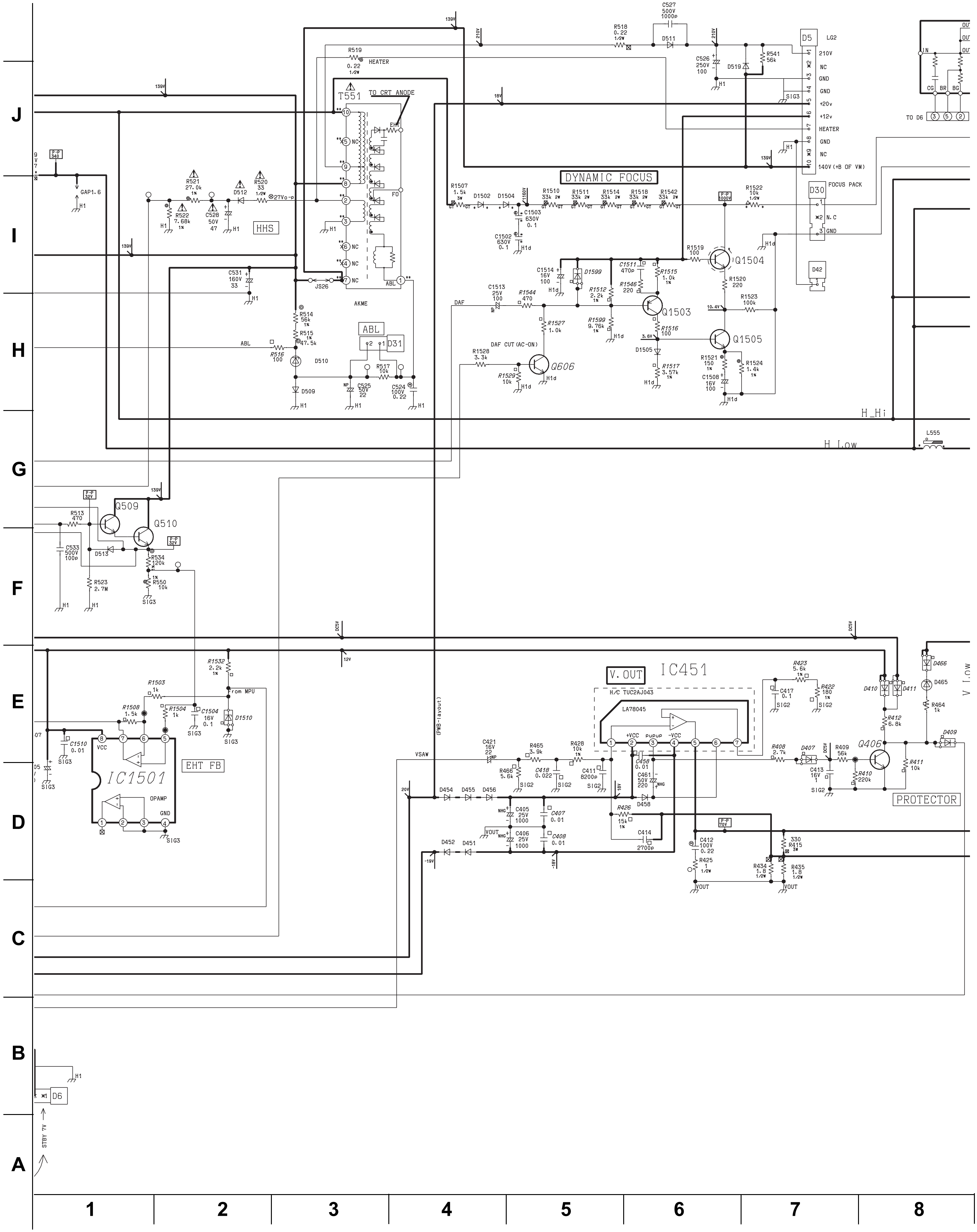
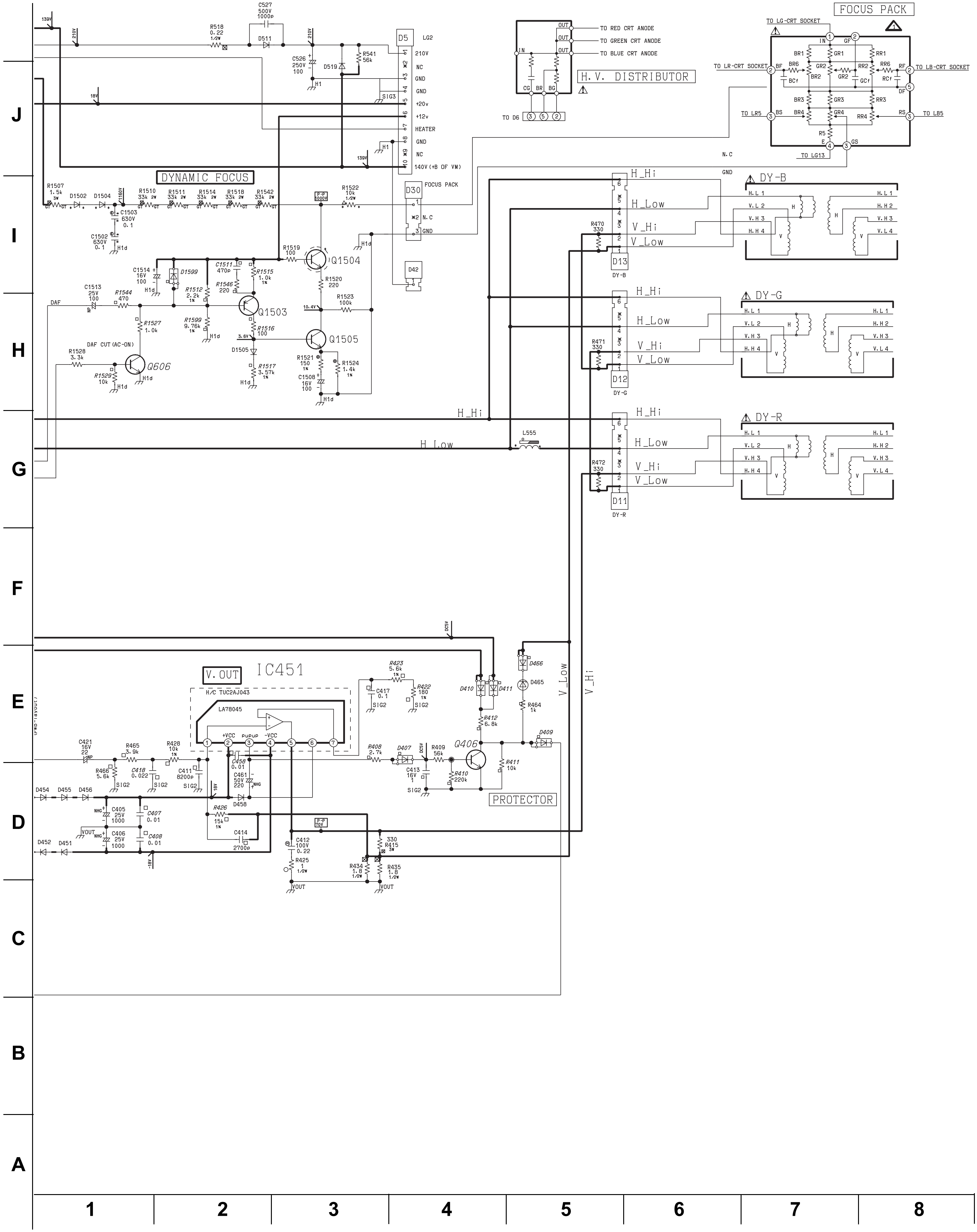
8
Q501
Q551
T501
L500
L501
R506
0.47
D516
C535 25V 470
R503 18 2W
C501 25V 100
C502 1
R504 270 3W
C503 500V 0.001
D501
R505 12 1W
JS18
HD1
H1
C512 2kV 1000p
C522 2kV 1800p
C523 2kV 1800p
C518 2kV 220p
C519 2kV 220p
C520 50V 0.01
D504
R542 JW
R535 3.9k
D503
L515
L516
C514 2kV 2200p
C511 2kV 2200p
C513 400V 0.01u
L511
L510
C708 100V 6.8
L704
C509 200V 0.47
GAP1.6
R521 27.0k 1%
R522 7.68k 1%
C528 50V 47
D512
139V
P-P 1450V
P-P 340
P-P 25V
P-P 42V
P-P 12V
P-P 80
P-P 140
P-P 32V
R525 1.5k
HD
L701 10
L702
C703 200V 0.1u
C702 2kV 270p
D702
PCC
L703 1.5m
R708 4.7 5W
C704 500V 390p
Q701
R706 68 1/2W
D634
FBP TO GC2
C531 160V 33
ABL
IC701
R1505 1k
R1502 2.2k
C707 0.01
C701 16V 100
SIG3
VCC
R704 1k
D1503
R1506 1k
C1506 0.01
D1506
R1509 1k
C1509 16V 1
R643 100
R621 10k
R622 1.5k
R624 100
GND
Comparator
HHS
PCC
EW DRIVE FROM GC2
H DRIVE FROM GC2
FBP
EW
DAF
HHS
HD
-20V
GH
RV
RH
IC7002
STK392-110
BV
BH
GV
C7018 0.01
C7006 25V 220
C7016 0.01
C7004 25V 220
NHG
CONV
C7032 0.1
C7002 25V 2.2
R7034 27k
R7035 4.7k
Q7007
C7035 0.1
R7036 2.2k
R7046 10k
R7037 2.2k
R7047 10k
R7038 2.2k
R7048 10k
C7034 0.1
R7030 2.2k
R7031 2.2k
R7040 10k
R7041 10k
R7026 2.2k
R7045 10k
GH-OUT
RV-OUT
RH-OUT
BV-OUT
BH-OUT
GV-OUT
R7027 3.3k
R7029 3.3k
R7032 3.3k
R7052 3.3k
R7055 3.3k
R7058 3.3k
GH-R
RV-R
RH-R
BV-R
BH-R
GV-R
R7012 2.2 2W
R7013 2.2 2W
R7014 2.2 2W
R7015 2.2 2W
R7016 2.2 2W
R7011 2.2 2W
EHTFB
Q509
Q510
R513 470
C533 500V 100p
D513
R534 120k
R523 2.7M
R550 10k
12V
R1532 2.2k 1%
R1503 1k
R1508 1.5k
R1504 1k
C1504 16V 0.1
D1507
C1510 0.01
C1505 16V 100
IC1501
EHT FB
OPAMP
From M
C7165 47 35V
C7150 47 35V
D22
D23
DC2
DC3
WP
HBLK
H-SYNC
HD
VD
SET5V
GND
YS
+20V
OSD_R
OSD_G
OSD_B
SDA
SCL
DAF
D453
(PWB-layout)
STBY 7V
D3
D4
D6
SIG2
A3
A4
EW
HD (TO CONV)
VD (TO CONV)
C_SDA
C_SCL
SDA2
SCL2
HHS DET
EFT-ADJ
EFTFB
DAF-CUT
V_SAW
STBY 7V
EHT F/B(R)
EHT CAPA GND
EHT REG. GND
TO EHT SEPA.

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
T551
TO CRT ANODE
EHT
FO
ABL
AKME
JS26
R519 0.22 1/2W
HEATER
HHS
GAP1.6
R521 27.0k 1%
R522 7.68k 1%
C528 50V 47
D512
R520 33 1/2W
27Vp-p
C531 160V 33
R514 56k 1%
R515 1% 47.5k
R516 100
D510
D509
ABL
D31
R517 10k
C525 50V 22
C524 100V 0.22
C527 500V 1000p
R518 0.22 1/2W
D511
C526 250V 100
D519
R541 56k
D5
LG2
210V
NC
GND
GND
+20v
+12v
HEATER
GND
NC
140V (+B OF VM)
SIG3
DYNAMIC FOCUS
R1507 1.5k 3W
D1502
D1504
R1510 33k 2W
R1511 33k 2W
R1514 33k 2W
R1518 33k 2W
R1542 33k 2W
R1522 10k 1/2W
C1503 630V 0.1
C1502 630V 0.1
D30
FOCUS PACK
N.C
GND
D42
C1514 16V 100
D1599
C1511 470p
R1515 1.0k 1%
R1546 220
R1512 2.2k 1%
R1519 100
Q1504
R1520 220
C1513 25V 100
R1544 470
DAF
Q1503
R1523 100k
R1599 9.76k 1%
R1516 100
R1527 1.0k
DAF CUT (AC-ON)
R1528 3.3k
R1529 10k
Q606
D1505
R1517 3.57k 1%
Q1505
R1521 150 1%
R1524 1.4k 1%
C1508 16V 100
H_Hi
H_Low
L555
TO D6
CG
BR
BG
IN
OUT
Q509
Q510
R513 470
C533 500V 100p
D513
R534 120k
R550 10k
R523 2.7M
DC5V
12V
R1532 2.2k 1%
From MPU
R1503 1k
R1508 1.5k
R1504 1k
C1504 16V 0.1
D1510
C1510 0.01
VCC
IC1501
OPAMP
GND
EHT FB
(PWB-layout)
VSAW
V.OUT
IC451
H/C TUC2AJ043
LA78045
+VCC
PUPUP
-VCC
C421 16V 22
R465 3.9k
R466 5.6k
C418 0.022
R428 10k
C411 8200p
C458 0.01
C461 50V 220
R423 5.6k 1%
C417 0.1
R422 180 1%
D410
D411
D466
D465
R464 1k
R412 6.8k
D409
R408 2.7k
D407
R409 56k
Q406
R411 10k
C413 16V 1
R410 220k
PROTECTOR
V Low
20V
D454
D455
D456
C405 25V 1000
C407 0.01
C406 25V 1000
C408 0.01
VOUT
D452
D451
-19V
-18V
R426 15k 1%
D458
C414 2700p
C412 100V 0.22
R425 1 1/2W
R434 1.8 1/2W
R435 1.8 1/2W
330 R415 3W
D6
STBY 7V
H1
H1d
SIG2
SIG3
P-P 340
P-P 32V
P-P 1000V
P-P 70V
139V
18V


DYNAMIC FOCUS
FOCUS PACK
H.V. DISTRIBUTOR
TO RED CRT ANODE
TO GREEN CRT ANODE
TO BLUE CRT ANODE
TO D6
TO LG-CRT SOCKET
TO LR-CRT SOCKET
TO LB-CRT SOCKET
TO LR5
TO LB5
TO LG13
D5
LG2
210V
NC
GND
+20v
+12v
HEATER
140V (+B OF VM)
D30
D42
SIG3
DY-B
DY-G
DY-R
D13
D12
D11
H_Hi
H_Low
V_Hi
V_Low
L555
R470 330
R471 330
R472 330
Q1503
Q1504
Q1505
Q606
DAF
DAF CUT (AC-ON)
V.OUT
IC451
H/C TUC2AJ043
LA78045
+VCC
PUPUP
-VCC
Q406
PROTECTOR
D410
D411
D465
D466
D409
D407
DC5V
VOUT
SIG2
H1d
J
I
H
G
F
E
D
C
B
A
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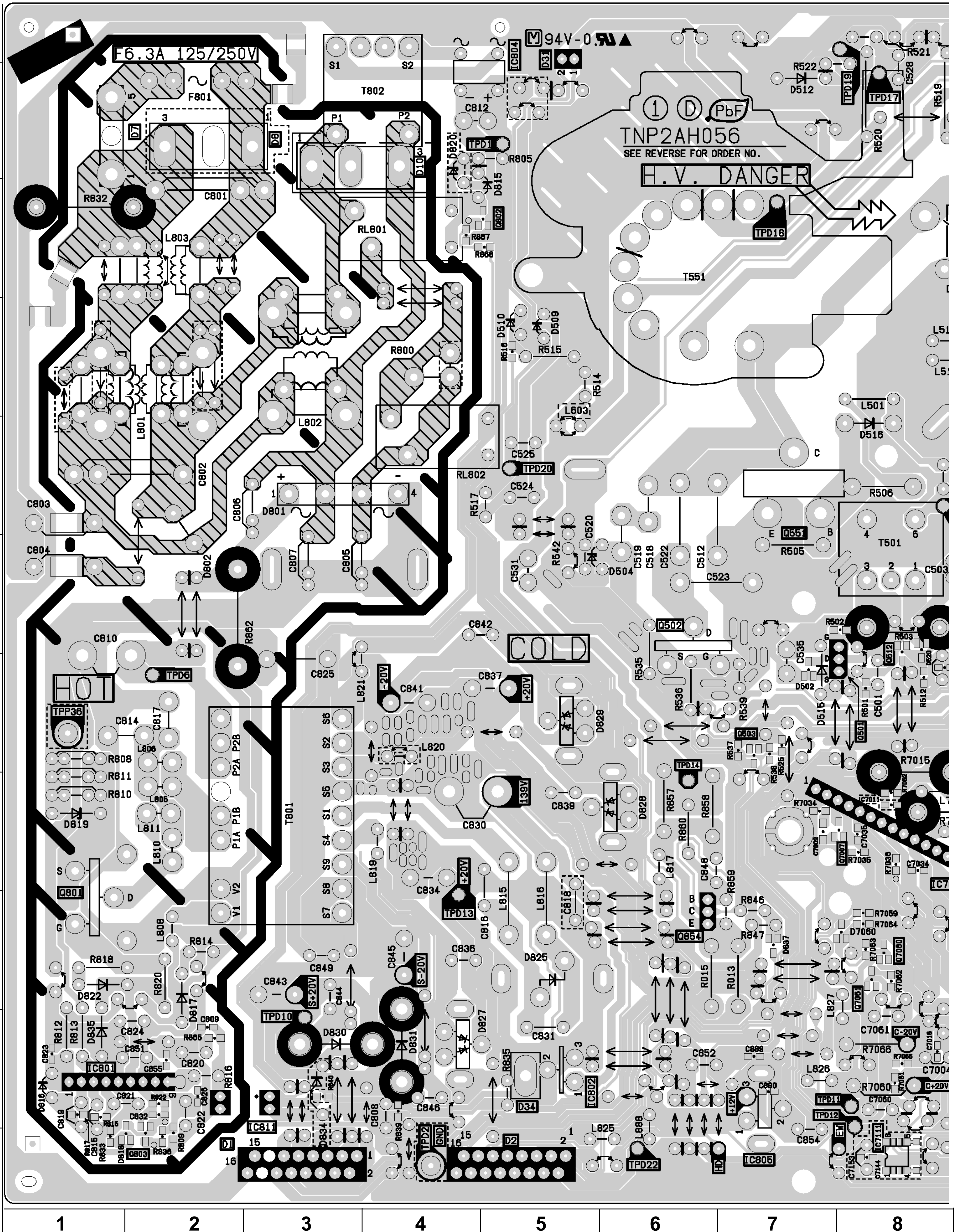
F6.3A 125/250V
94V-0
TNP2AH056
SEE REVERSE FOR ORDER NO.
H.V. DANGER
PbF
HOT
COLD
T802
T551
T801
T501
RL801
RL802
F801
C801
C802
L801
L802
L803
D801
R832
R862
TPD1
TPD6
TPD10
TPD13
TPD17
TPD18
TPD19
TPD20
TPD22
TPP36
IC801
IC802
IC804
IC805
IC811
Q551
Q502
Q801
Q854
D1
D2
-20V
+20V
S+20V
S-20V
139V
+12V
C-20V
C+20V
J
I
H
G
F
E
D
C
B
A
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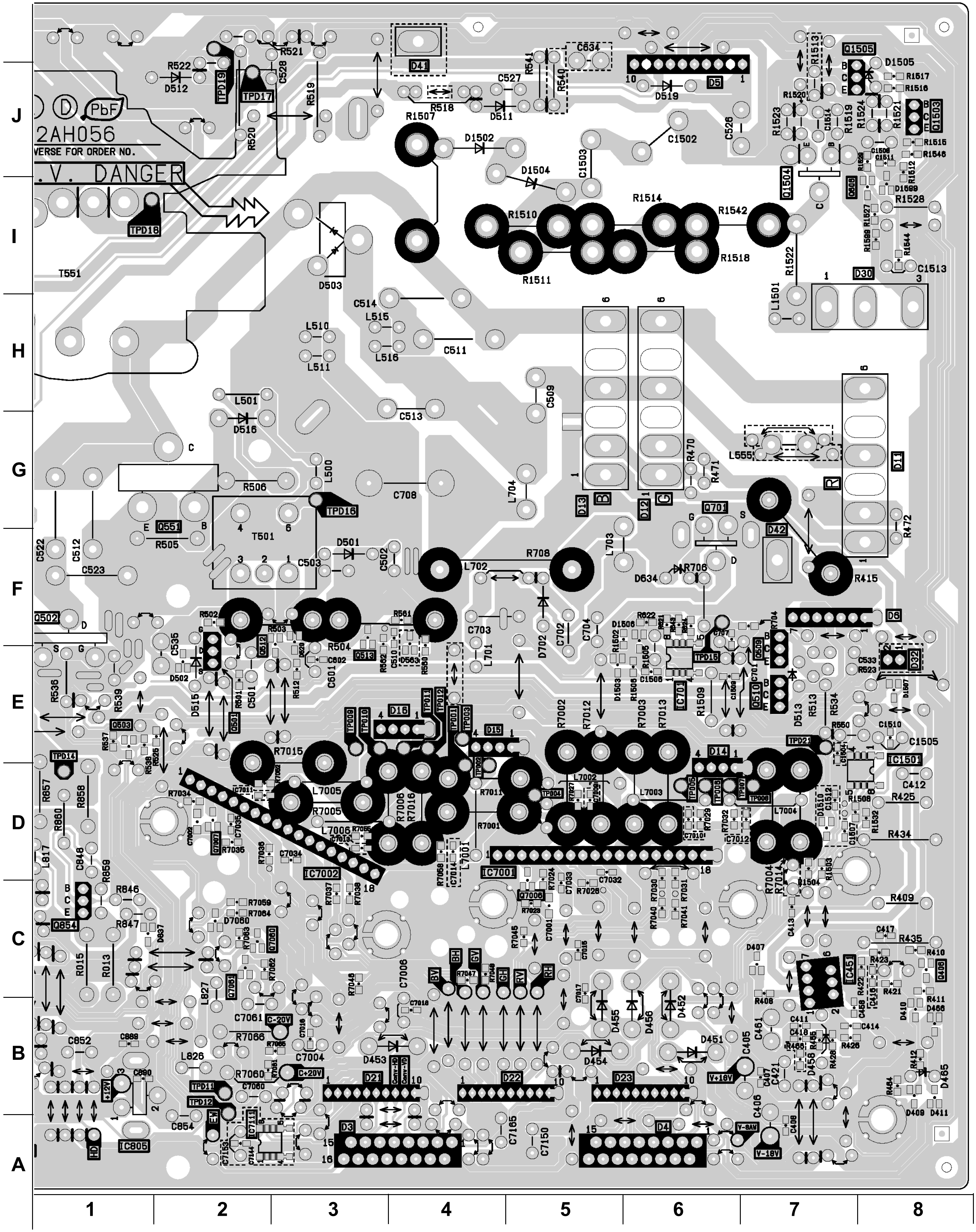
8

D-BOARD **1 of 2** **TNP2AH056** **PT-47WXD63G / PT-53WXD63G**

2AH056
VERSE FOR ORDER NO.
.V. DANGER
PbF
T551
D41
D5
D30
D1
D6
D32
D11
D12
D13
D14
D15
D16
D21
D22
D23
D3
D4
D42
IC701
IC7001
IC7002
IC1501
IC451
IC805
IC7111
Q1505
Q1503
Q1504
Q551
Q502
Q503
Q512
Q513
Q701
Q854
Q7006
TPD11
TPD12
TPD14
TPD15
TPD16
TPD17
TPD18
TPD19
TPD21
R1507
R1510
R1511
R1514
R1518
R1542
R7015
R7005
R7006
R7016
R7002
R7012
R7003
R7013
R708
R415
R504
R506
R505
L702
L7005
L7006
L7002
L7003
L7004
T501
C708
C-20V
C+20V
V+16V
V-16V
V-8AV
+12V
BV
BH
GV
GH
RV
RH
E-W
HD
J
I
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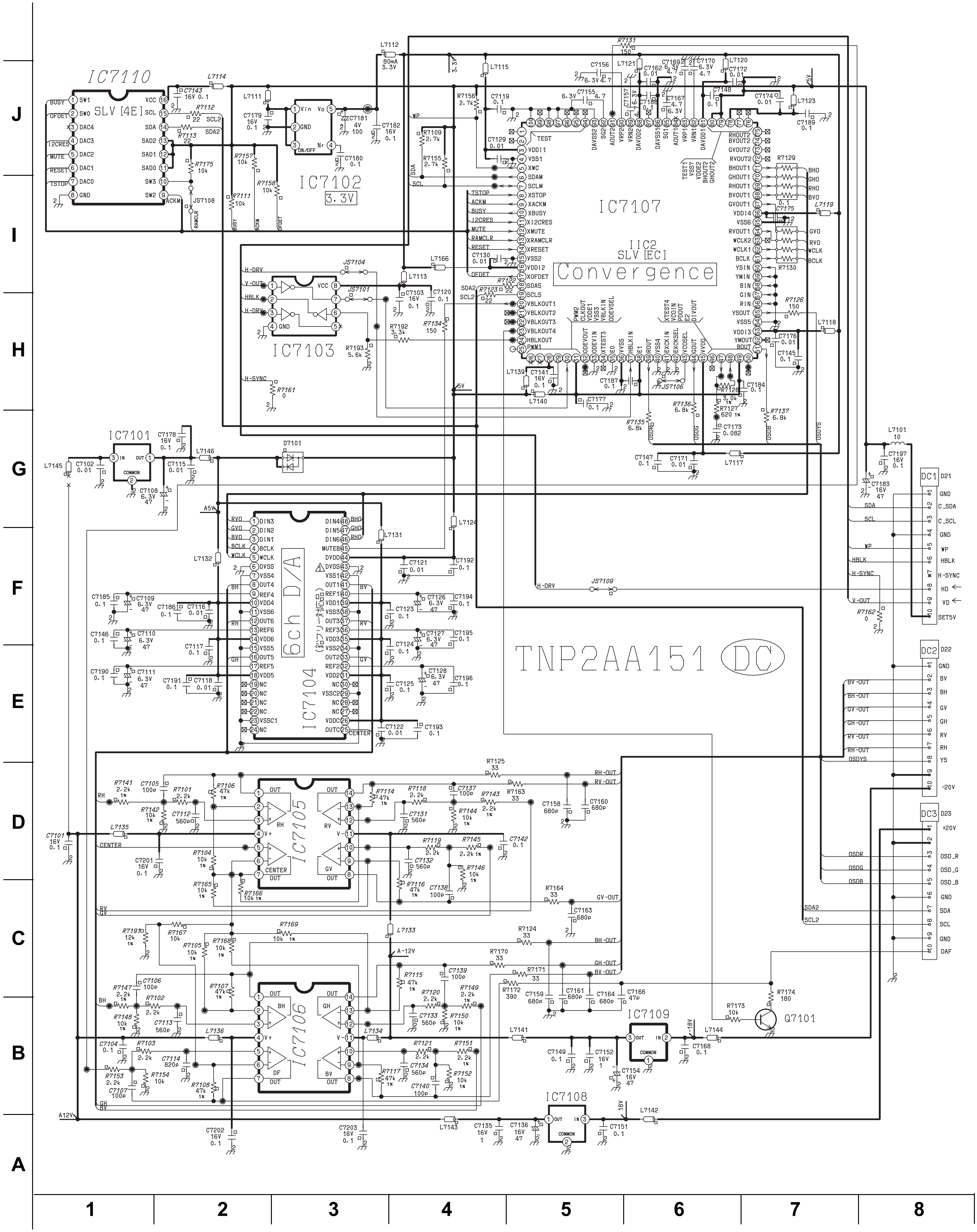
IC7110
SLV [4E]
IC7102
3.3V
IC7107
IIC2
SLV [EC]
Convergence
IC7103
IC7101
D7101
IC7104
6ch D/A
IC7105
IC7106
IC7109
IC7108
Q7101
TNP2AA151 DC
DC1 D21
GND
C_SDA
C_SCL
GND
WP
HBLK
H-SYNC
HD
VD
SET5V
DC2 D22
GND
BV
BH
GV
GH
RV
RH
YS
-20V
DC3 D23
+20V
OSD_R
OSD_G
OSD_B
GND
SDA
SCL
GND
DAF
BUSY
OFDET
I2CRES
MUTE
RESET
TSTOP
SDA2
SCL2
H-DRV
V-OUT
HBLK
H-SYNC
RH-OUT
RV-OUT
GV-OUT
BH-OUT
GH-OUT
BV-OUT
OSDR
OSDG
OSDB
OSDYS
A5V
A12V
A-12V
5V
3.3V
18V
J
I
H
G
F
E
D
C
B
A
1
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3
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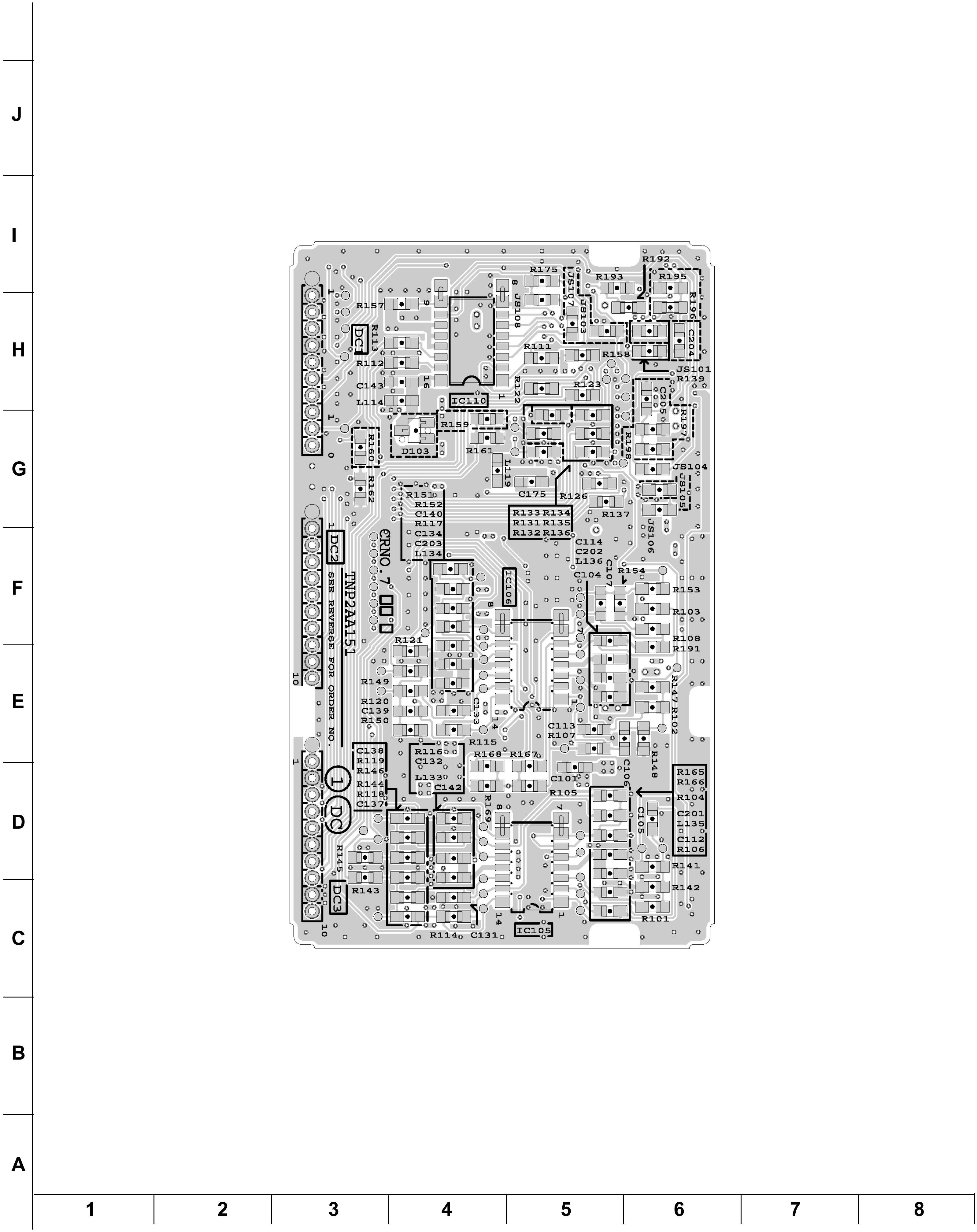
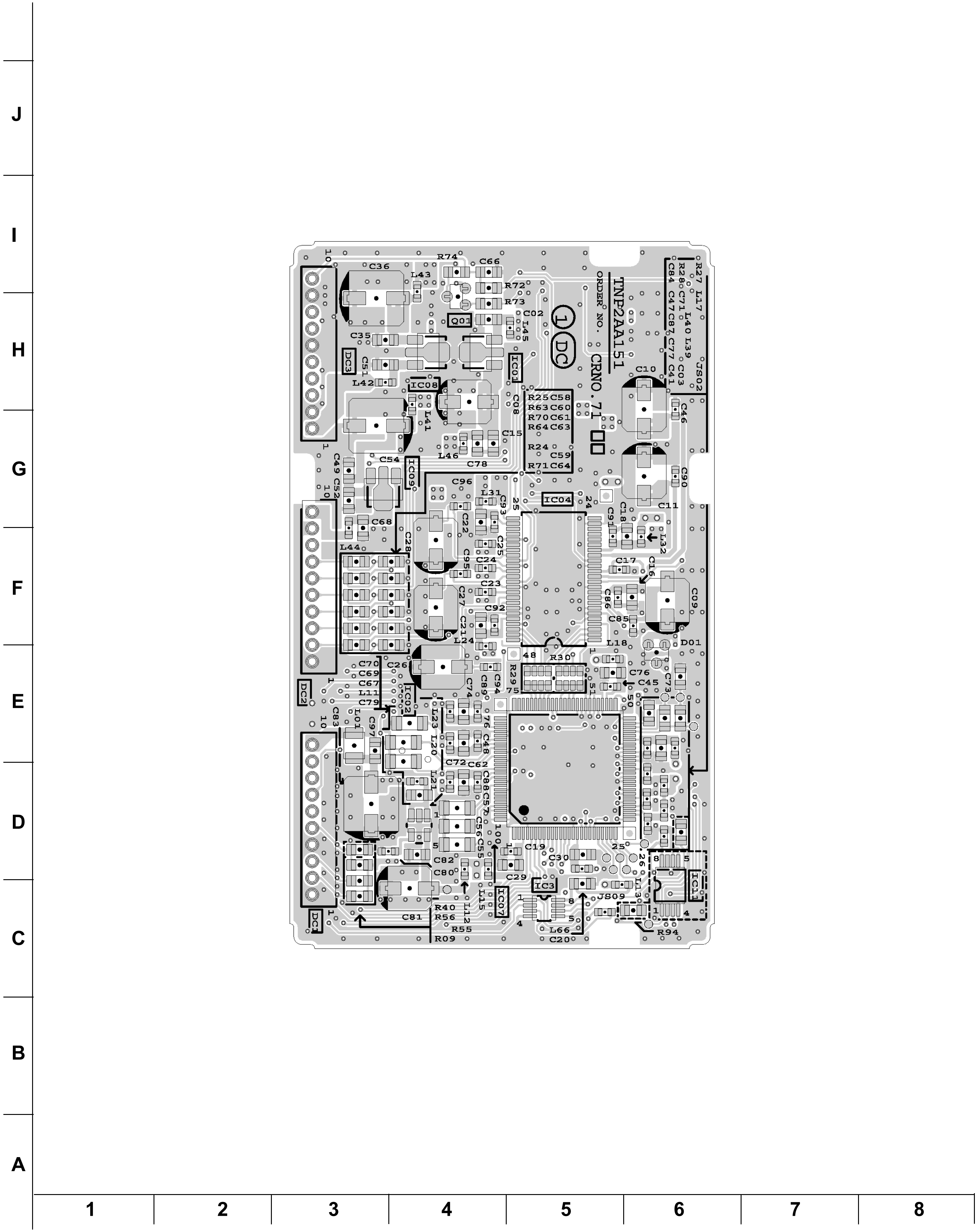

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA151
SEE REVERSE FOR ORDER NO.
CRNO.7
DC1
DC2
DC3
DC
1
IC110
IC106
IC105
D103
R157
R113
R112
C143
L114
R160
R162
R175
JS107
JS103
JS108
R193
R192
R195
R196
C204
R111
R158
JS101
R139
R122
R123
C205
R197
R198
R159
R161
L119
C175
R126
R137
JS104
JS105
JS106
R151
R152
C140
R117
C134
C203
L134
R133
R134
R131
R135
R132
R136
C114
C202
L136
C104
C107
R154
R153
R103
R108
R191
R147
R102
R121
R149
R120
C139
R150
C133
R115
C113
R107
R148
C138
R119
R146
R144
R118
C137
R116
C132
L133
C142
R168
R167
C101
C106
R105
R169
R165
R166
R104
C201
L135
C112
R106
C105
R145
R143
R141
R142
R101
R114
C131
8
9
16
14
7
10

DC-PCB

BOTTOM VIEW

TNP2AA151

PT-47WXD63G / PT-53WXD63G


J
I
H
G
F
E
D
C
B
A
1
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3
4
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6
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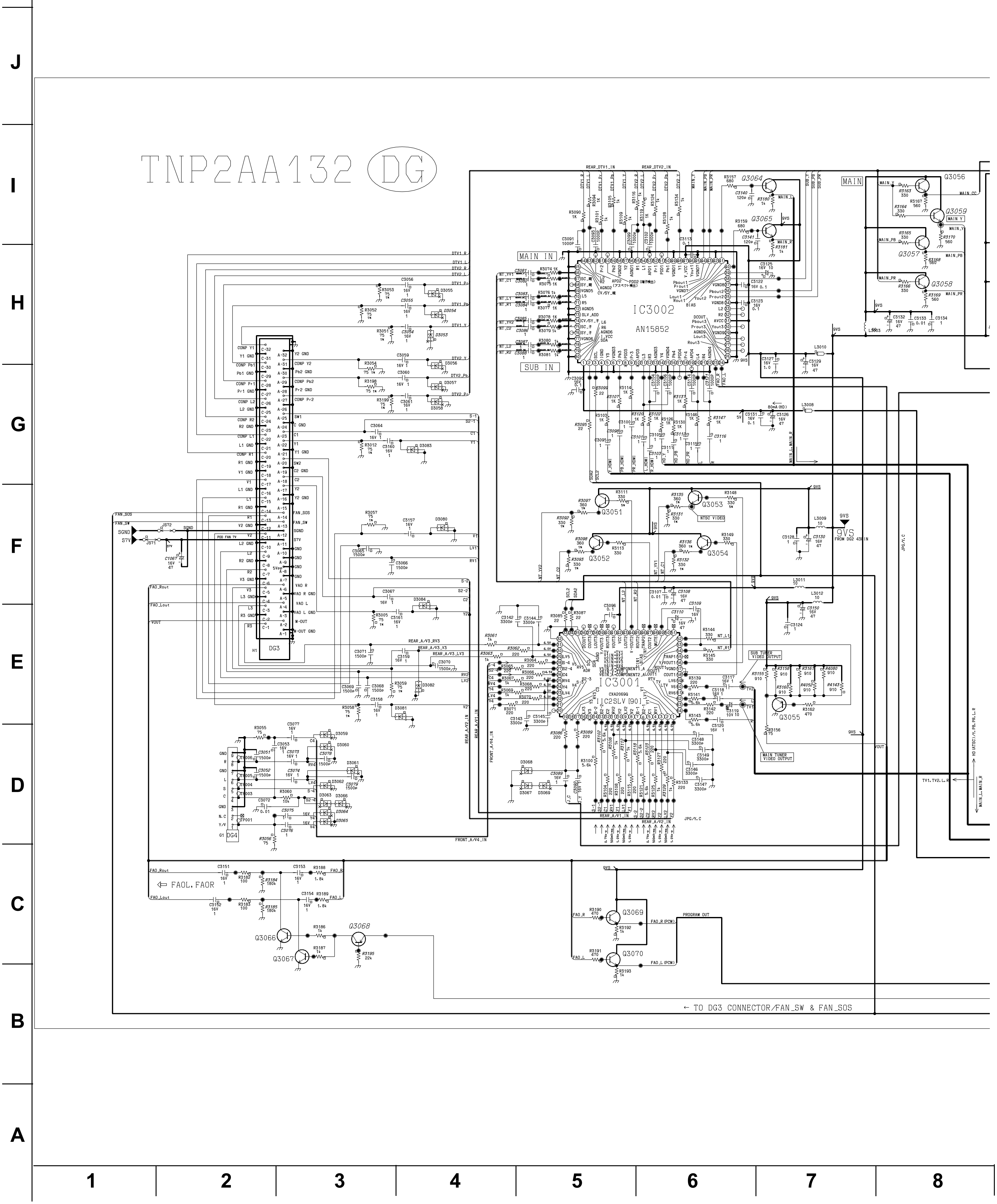
8
TNP2AA151
ORDER NO. CRNO.71
DC
1
DC1
DC2
DC3
IC01
IC02
IC03
IC04
IC07
IC08
IC09
IC11
Q01
D01
JS02
JS09
R74
C66
R72
R73
C02
L45
C36
L43
C35
C51
L42
L41
C08
R25 C58
R63 C60
R70 C61
R64 C63
R24
C59
R71 C64
C15
L46
C78
C54
C49
C52
C68
C96
L31
C93
C22
C25
C24
C95
C23
C27
C92
C21
L24
C28
L44
C10
C46
C90
C11
C91
C18
L32
C17
C16
C09
C86
C85
L18
R30
R29
C76
C45
C73
C26
C74
C89
C94
C70
C69
C67
L11
C79
C83
L01
C97
L23
L20
C48
C72
C62
L21
C88
C57
C56
C55
C82
C80
R40
R56
R55
R09
C81
L12
L15
C19
C29
C30
L13
L66
C20
R94
R27 L17
R28 C71 L40 L39
C84 C47 C87 C77 C41 C03
25
24
48
1
75
51
76
50
100
26
10
5
8
4

DC-PCB TOP VIEW TNP2AA151 PT-47WXD63G / PT-53WXD63G


TNP2AA132 (DG)
MAIN IN
SUB IN
IC3002
AN15852
IC3001
CXA2069Q
MAIN
DG3
DG4
H1
G1
Q3051
Q3052
Q3053
Q3054
Q3055
Q3056
Q3057
Q3058
Q3059
Q3064
Q3065
Q3066
Q3067
Q3068
Q3069
Q3070
REAR_DTV1_IN
REAR_DTV2_IN
REAR_A/V1_IN
REAR_A/V2_IN
FRONT_A/V4_IN
NTSC VIDEO
9VS
FROM DG2 43PIN
SUB TUNER VIDEO OUTPUT
MAIN TUNER VIDEO OUTPUT
PROGRAM OUT
FAO_R (PCM)
FAO_L (PCM)
⇐ FAOL, FAOR
← TO DG3 CONNECTOR/FAN_SW & FAN_SOS
SGND
S7V
HD (ATSC) Y, PB, PR, L, R
TV1, TV2, L, R
MAIN_L, MAIN_R
JPG/Y,C
J
I
H
G
F
E
D
C
B
A
1
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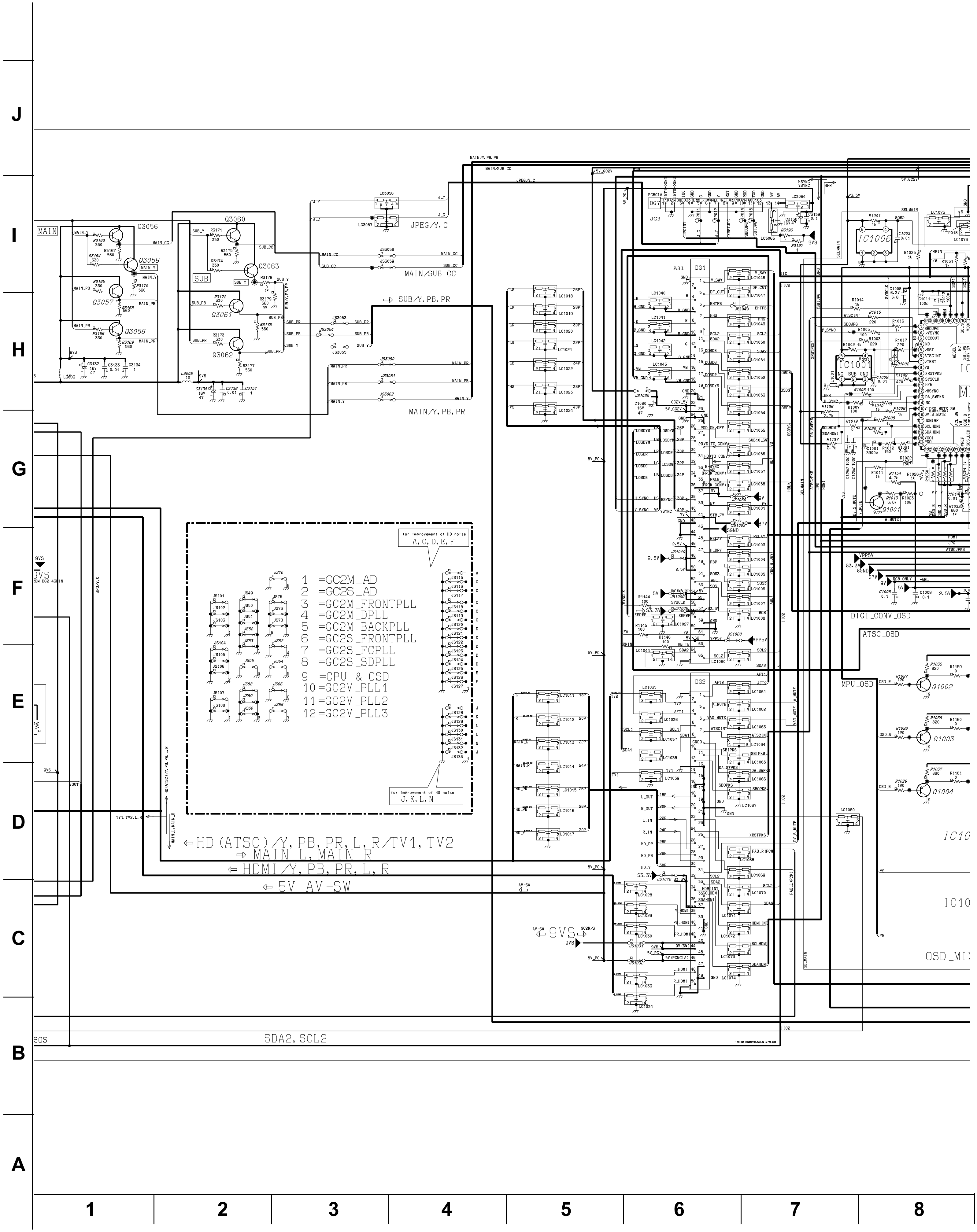
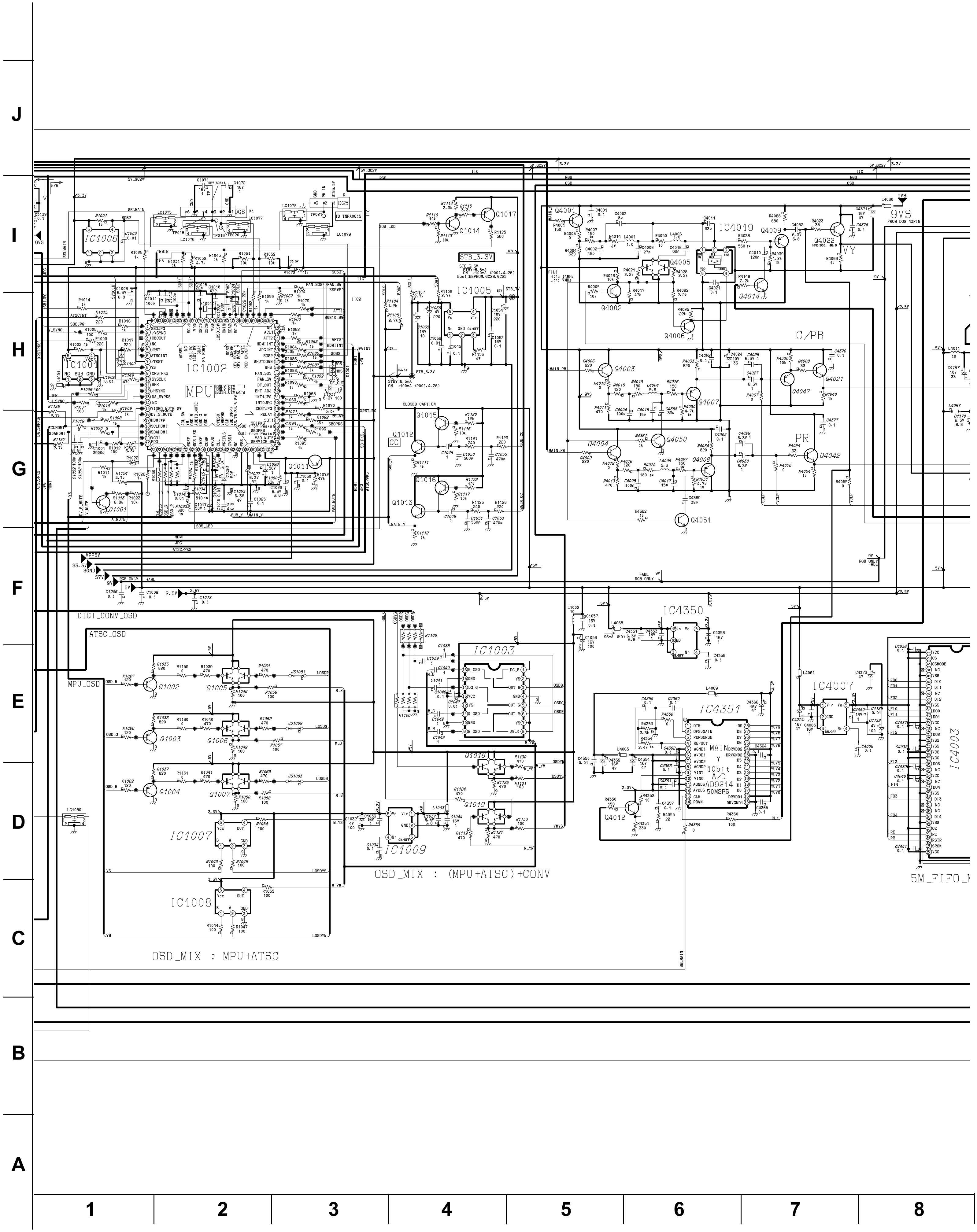
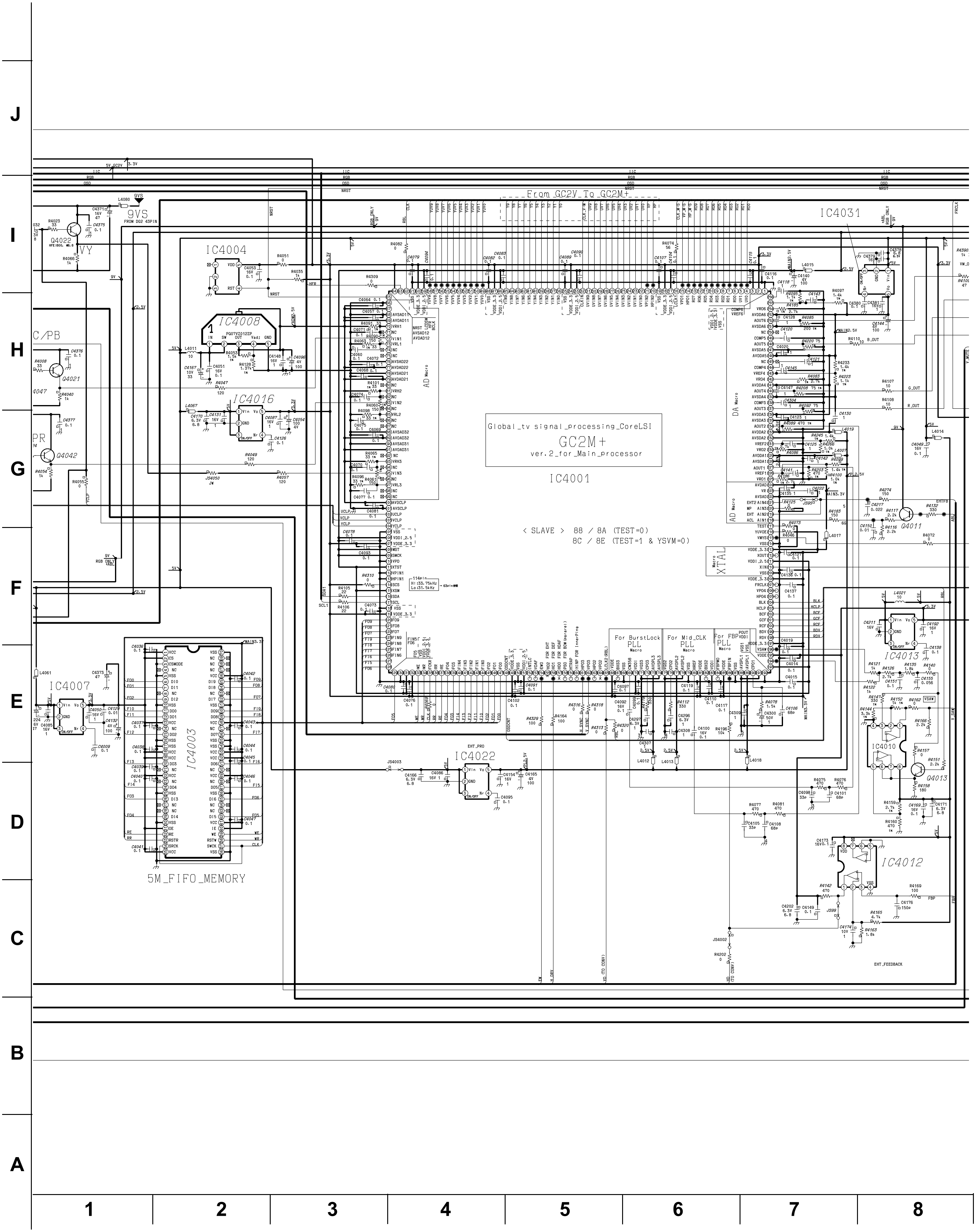
8


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
MAIN
SUB
Q3056
Q3057
Q3058
Q3059
Q3060
Q3061
Q3062
Q3063
MAIN Y
SUB Y
JPEG/Y,C
MAIN/SUB CC
SUB/Y,PB,PR
MAIN/Y,PB,PR
MAIN/SUB CC
JPEG/Y,C
9VS
A31
DG1
DG2
DG7
JG3
PCMCIA
IC1006
IC1001
Q1001
Q1002
Q1003
Q1004
for improvement of HD noise
A,C,D,E,F
1 =GC2M_AD
2 =GC2S_AD
3 =GC2M_FRONTPLL
4 =GC2M_DPLL
5 =GC2M_BACKPLL
6 =GC2S_FRONTPLL
7 =GC2S_FCPLL
8 =GC2S_SDPLL
9 =CPU & OSD
10 =GC2V_PLL1
11 =GC2V_PLL2
12 =GC2V_PLL3
for improvement of HD noise
J,K,L,N
HD(ATSC)/Y,PB,PR,L,R/TV1,TV2
MAIN L,MAIN R
HDMI/Y,PB,PR,L,R
5V AV-SW
AV-SW
9VS
SDA2,SCL2
IIC2
DIGI_CONV_OSD
ATSC_OSD
MPU_OSD
OSD_MIX
IC10
5V_GC2V
S3.3V
VPP5V
SGND
S7V
RGB ONLY
TV1,TV2,L,R
HD(ATSC)/Y,PB,PR,L,R
MAIN_L,MAIN_R
JPG/Y,C

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IC1006
IC1001
IC1002
MPU
IC1005
STB_3.3V
CLOSED CAPTION
Q1012
Q1013
Q1014
Q1015
Q1016
Q1017
Q1011
Q1001
CC
DIGI_CONV_OSD
ATSC_OSD
MPU_OSD
Q1002
Q1003
Q1004
Q1005
Q1006
Q1007
IC1007
IC1008
OSD_MIX : MPU+ATSC
IC1003
IC1009
Q1018
Q1019
OSD_MIX : (MPU+ATSC)+CONV
IC4019
Q4001
Q4002
Q4003
Q4004
Q4005
Q4006
Q4007
Q4008
Q4009
Q4012
Q4014
Q4021
Q4022
Q4042
Q4047
Q4050
Q4051
C/PB
PR
VY
9VS
FROM DG2 43PIN
IC4350
IC4351
MAIN Y 10bit A/D
AD9214 50MSPS
IC4007
IC4003
5M_FIFO_M
SELMAIN
VPP5V
S3.3V
SGND
S7V
9V
RGB ONLY
+ABL
2.5V
5V_GC2V
3.3V
RGB
OSD
IIC


J
I
H
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F
E
D
C
B
A
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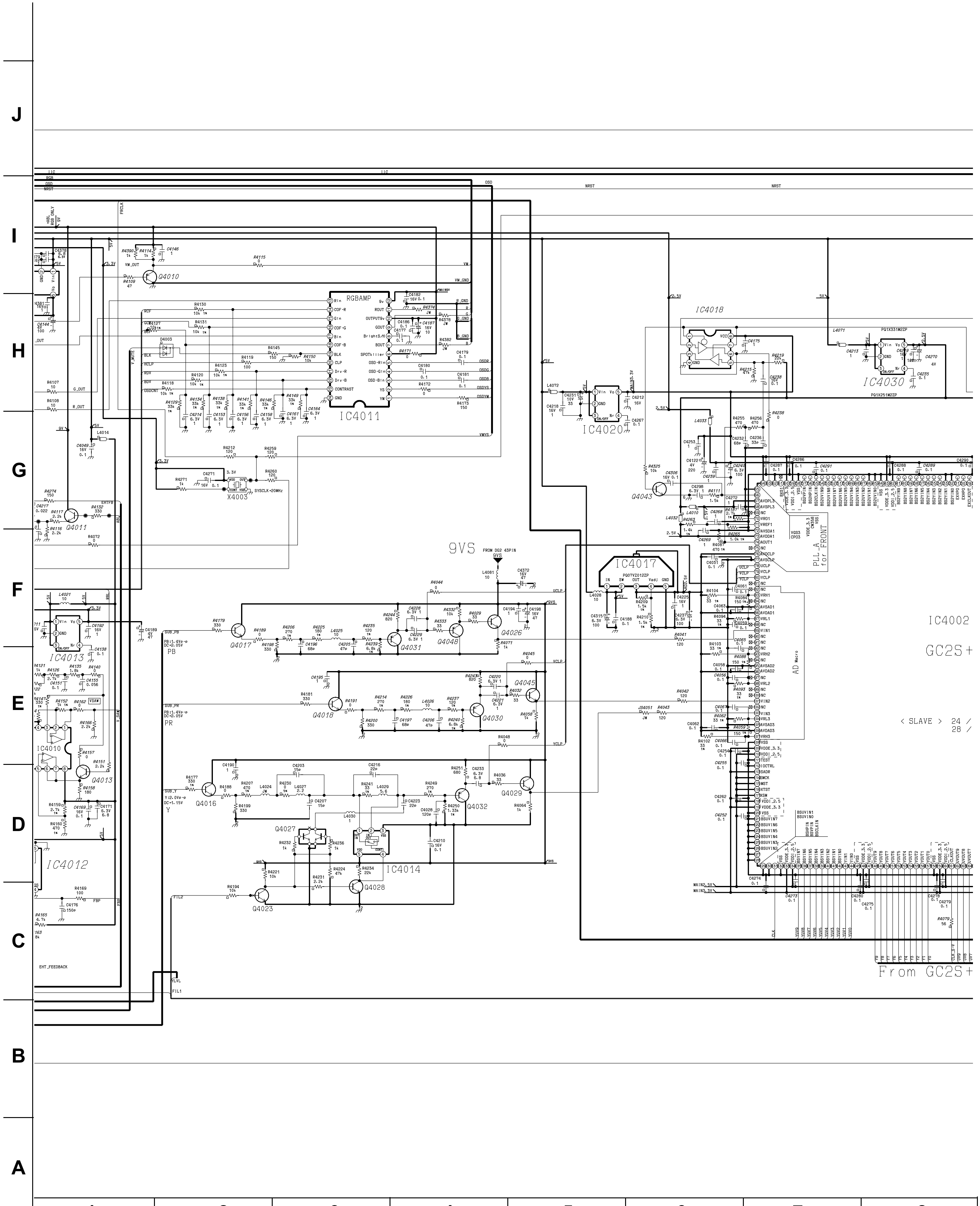
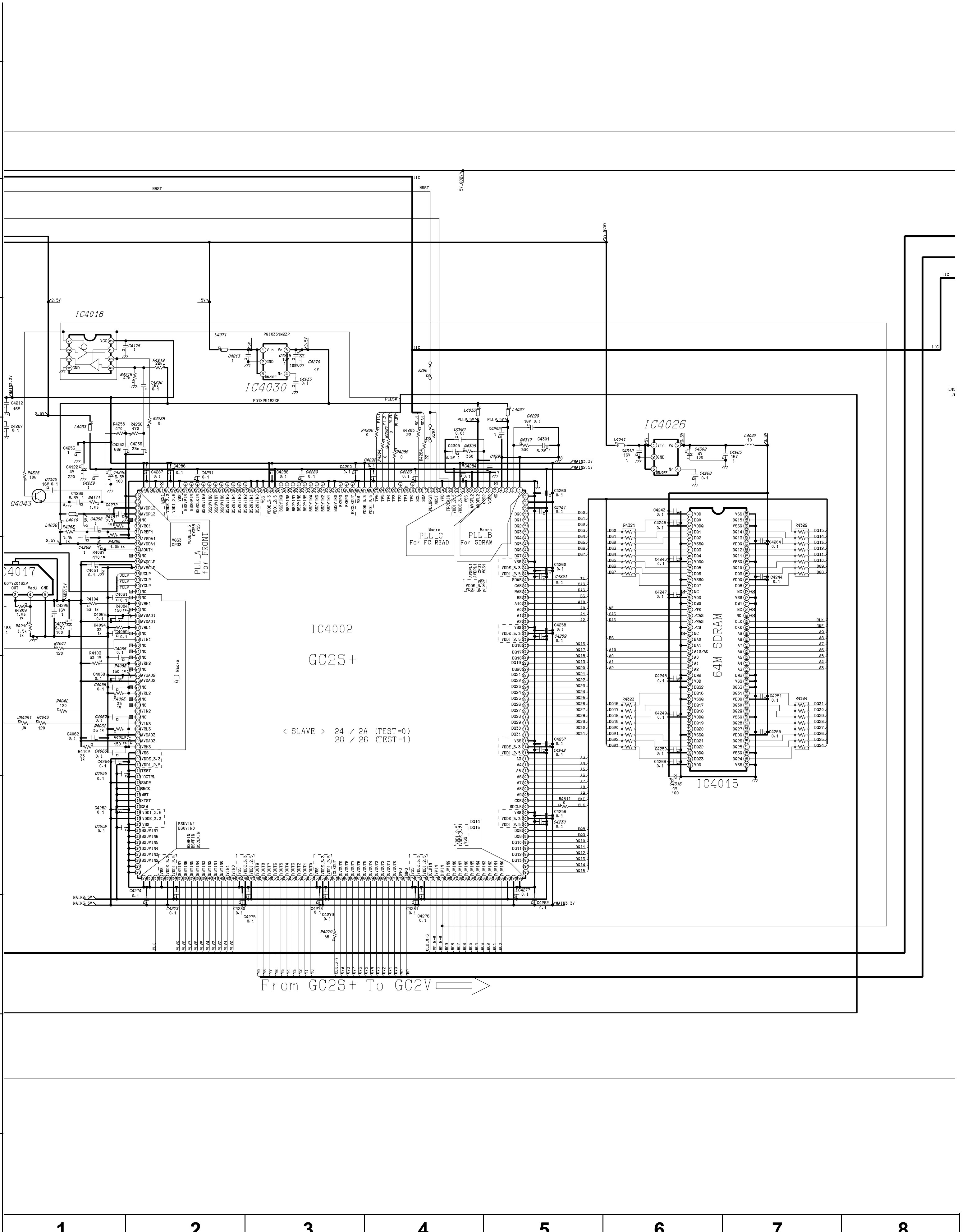
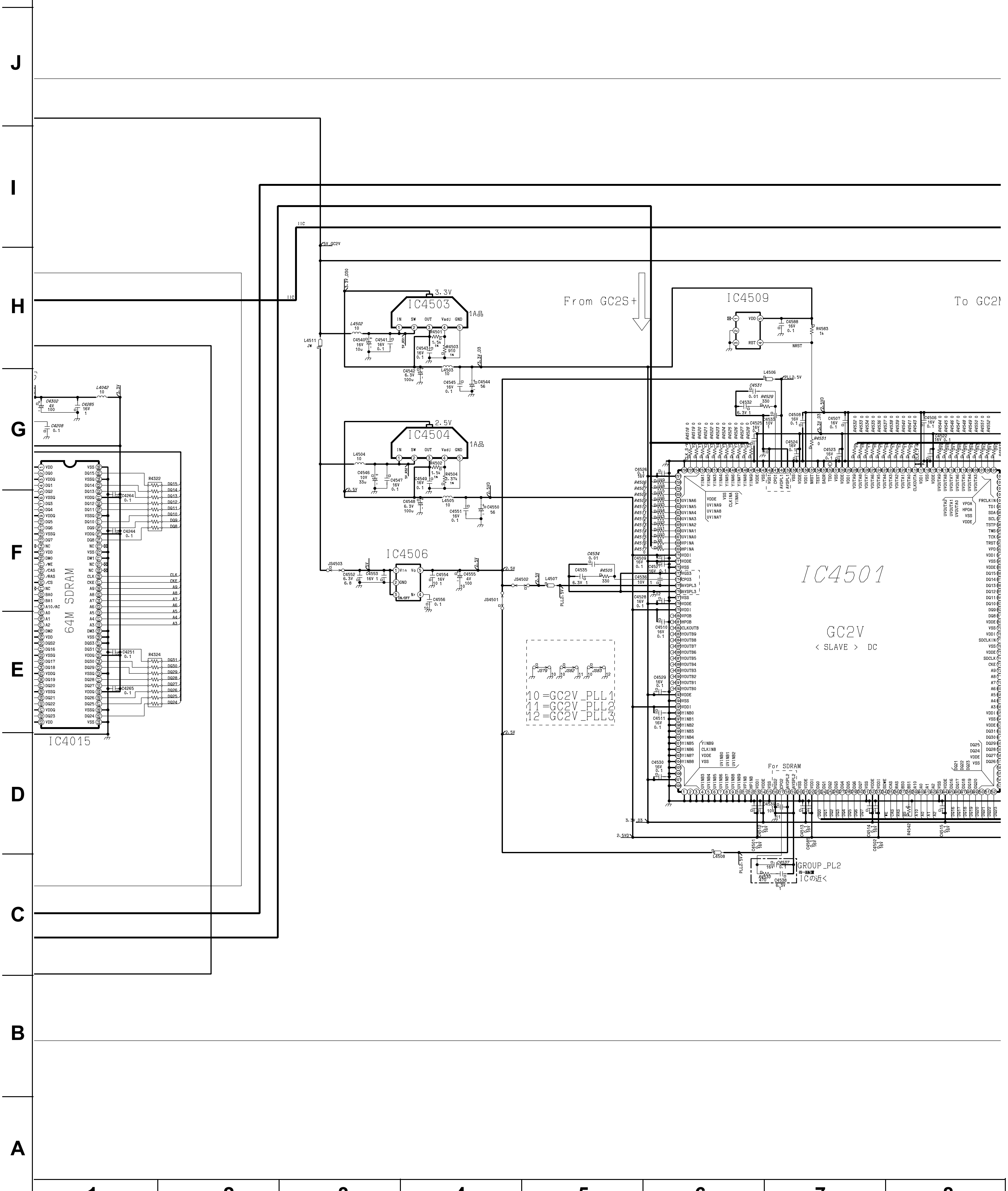
4
5
6
7
8
From GC2V To GC2M+
IC4001
Global_tv signal_processing_CoreLSI
GC2M+
ver.2_for_Main_processor
< SLAVE > 88 / 8A (TEST=0)
8C / 8E (TEST=1 & YSVM=0)
AD Macro
DA Macro
XTAL
For BurstLock PLL Macro
For Mid_CLK PLL Macro
For FBP PLL Macro
IC4003
5M_FIFO_MEMORY
IC4004
IC4008
PQ07VZ012ZP
IC4016
IC4007
IC4022
EHT_PRO
IC4031
IC4013
IC4010
IC4012
Q4011
Q4013
Q4021
Q4022
Q4042
9VS
FROM DG2 43PIN
C/PB
PR
VY
EHT_FEEDBACK
MAIN3.3V
114pin
H:33.75kHz
L:31.5kHz


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IIC
RGB
OSD
NRST
RGBAMP
IC4011
Q4010
X4003
SYSCLK=20MHz
IC4013
IC4010
Q4013
IC4012
Q4011
EHT_FEEDBACK
IC4018
IC4030
PQ1X331M2ZP
PQ1X251M2ZP
IC4020
Q4043
9VS
FROM DG2 43PIN
IC4017
PQ07VZ012ZP
Q4017
Q4031
Q4048
Q4026
PB
SUB_PB
PB:1.4Vp-p DC=2.05V
Q4018
Q4030
Q4045
PR
SUB_PR
PR:1.4Vp-p DC=2.05V
Q4016
Q4032
Q4029
Y
SUB_Y
Y:2.0Vp-p DC=1.15V
Q4027
IC4014
Q4028
Q4023
FIL2
FIL1
YLVL
PLL_A for FRONT
AD Macro
IC4002
GC2S+
< SLAVE > 24 / 28 /
MAIN2.5V
MAIN3.3V
From GC2S+


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IC4018
IC4030
PQ1X331M2ZP
PQ1X251M2ZP
IC4026
IC4017
Q07VZ012ZP
Q4043
IC4002
GC2S+
< SLAVE > 24 / 2A (TEST=0)
28 / 26 (TEST=1)
AD Macro
PLL_A for FRONT
Macro PLL_C For FC READ
Macro PLL_B For SDRAM
IC4015
64M SDRAM
From GC2S+ To GC2V
NRST
IIC
PLLSW
MAIN3.3V
MAIN2.5V
2.5V
5V
5V_GC2V



J
I
H
G
F
E
D
C
B
A
IIC
5V_GC2V
3.3V_D30
3.3V
IC4503
1A
IN
SW
OUT
Vadj
GND
L4502
L4511
JW
C4540
C4541
C4543
C4542
R4501
R4503
L4503
C4545
C4544
3.3V_D3
From GC2S+
IC4509
VDD
RST
NRST
C4588
R4583
To GC2
2.5V
IC4504
L4504
C4546
C4547
C4549
C4548
R4502
R4504
L4505
C4551
C4550
2.5VD
L4042
C4302
C4285
C4208
64M SDRAM
IC4015
R4322
C4264
C4244
C4251
C4265
R4324
IC4506
JS4503
C4552
C4553
C4554
C4555
C4556
Vin
Vo
GND
Nr
ON/OFF
JS4502
JS4501
L4507
PLL2.5V
C4534
C4535
R4505
L4506
C4531
R4529
C4532
C4533
C4525
C4524
C4508
R4531
C4507
C4523
C4506
C4522
C4526
C4509
C4527
C4536
C4528
C4510
C4529
C4511
C4530
JS79
JS82
JS83
10 =GC2V_PLL1
11 =GC2V_PLL2
12 =GC2V_PLL3
IC4501
GC2V
< SLAVE > DC
For SDRAM
3.3V_D3
2.5VD
L4508
GROUP_PL2
ICの近く
C4537
C4538
R4530
C4512
C4513
C4514
C4515
R4542

1
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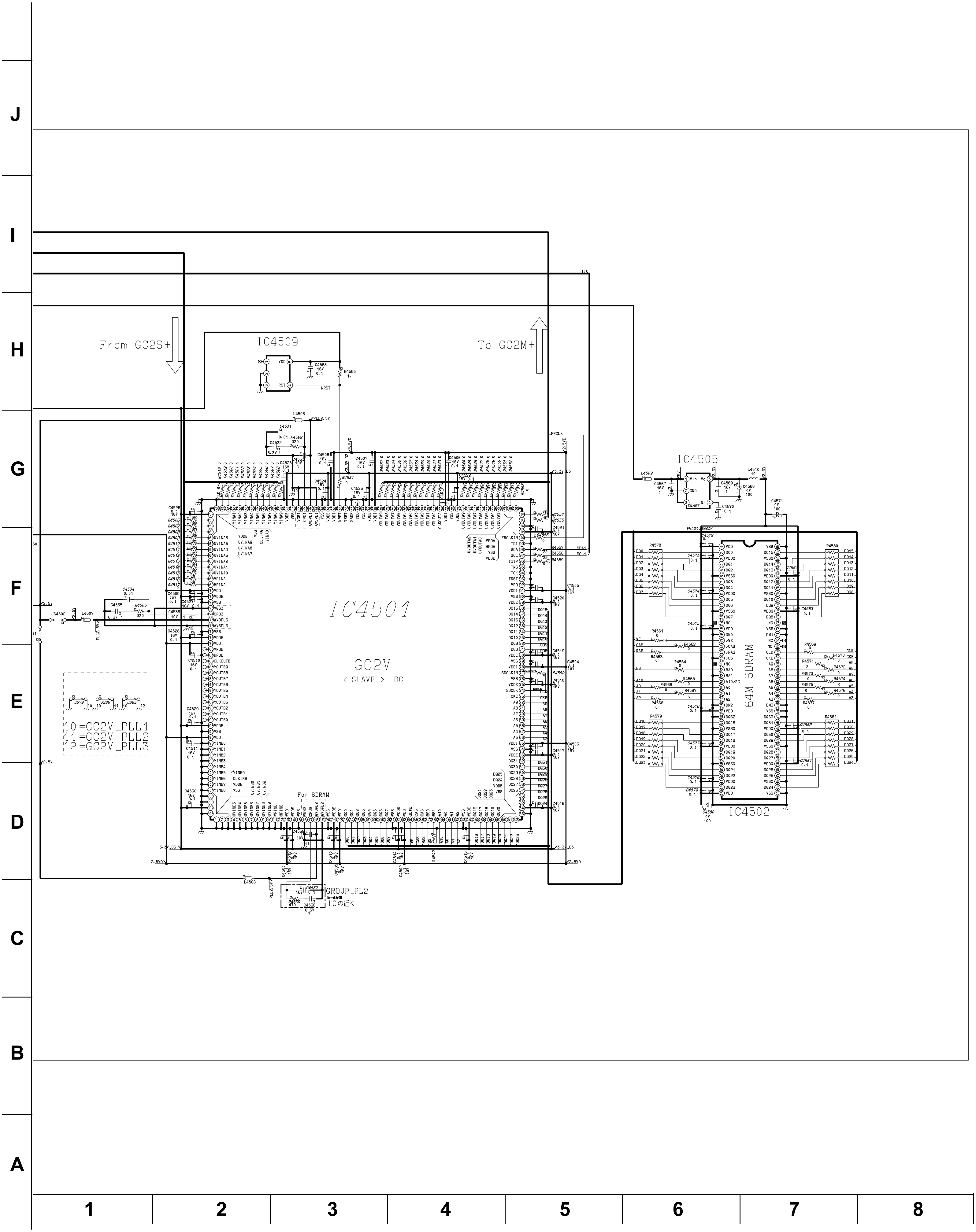
8


J
I
H
G
F
E
D
C
B
A
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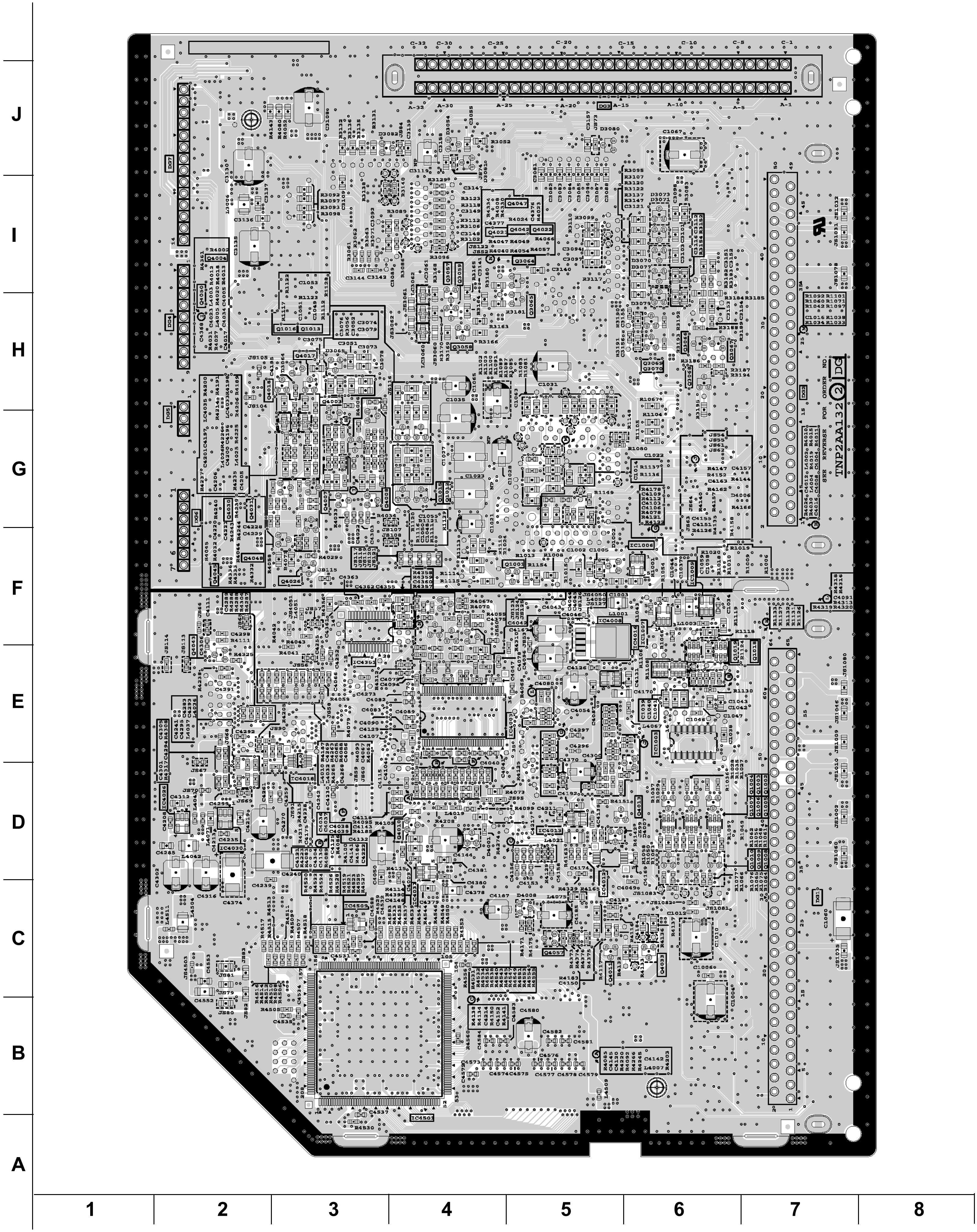
5
6
7
8
From GC2S+
To GC2M+
IC4509
VDD
RST
NRST
C4588
R4563
1k
L4506
PLL2.5V
C4531
R4529
330
C4532
IC4501
GC2V
< SLAVE > DC
For SDRAM
GROUP_PL2
ICの近く
C4537
C4538
R4530
L4508
L4507
JS4502
C4534
C4535
R4505
330
10 =GC2V_PLL1
11 =GC2V_PLL2
12 =GC2V_PLL3
JS79
JS82
JS83
3.3V_D3
2.5VD
FRCLK
SDA1
SCL1
IIC
IC4505
Vin
Vo
GND
ON/OFF
Nr
L4509
L4510
C4567
C4569
C4568
C4570
C4571
PQ1X331M2ZP
IC4502
64M SDRAM
R4578
R4579
R4580
R4581
VDD
VSS
CLK
CKE
/WE
/CAS
/RAS
/CS
BA0
BA1
A10/AC
DQM0
DQM1
DQM2
DQM3


J
I
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G
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C
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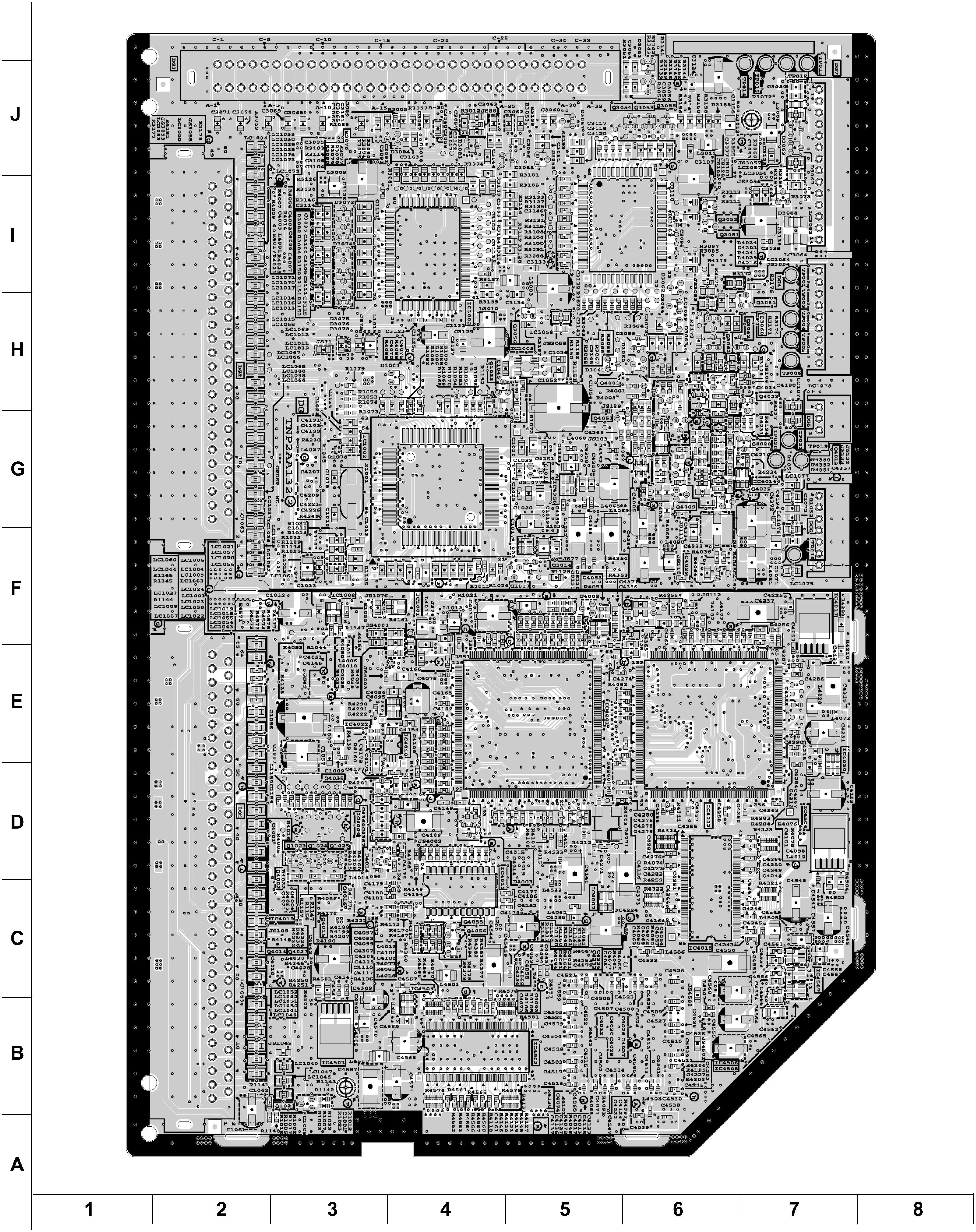
TNP2AA132 ② DG
FOR ORDER NO.
REVERSE SER

DG-PCB BOTTOM VIEW TNP2AA132 PT-47WXD63G / PT-53WXD63G


J
I
H
G
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C
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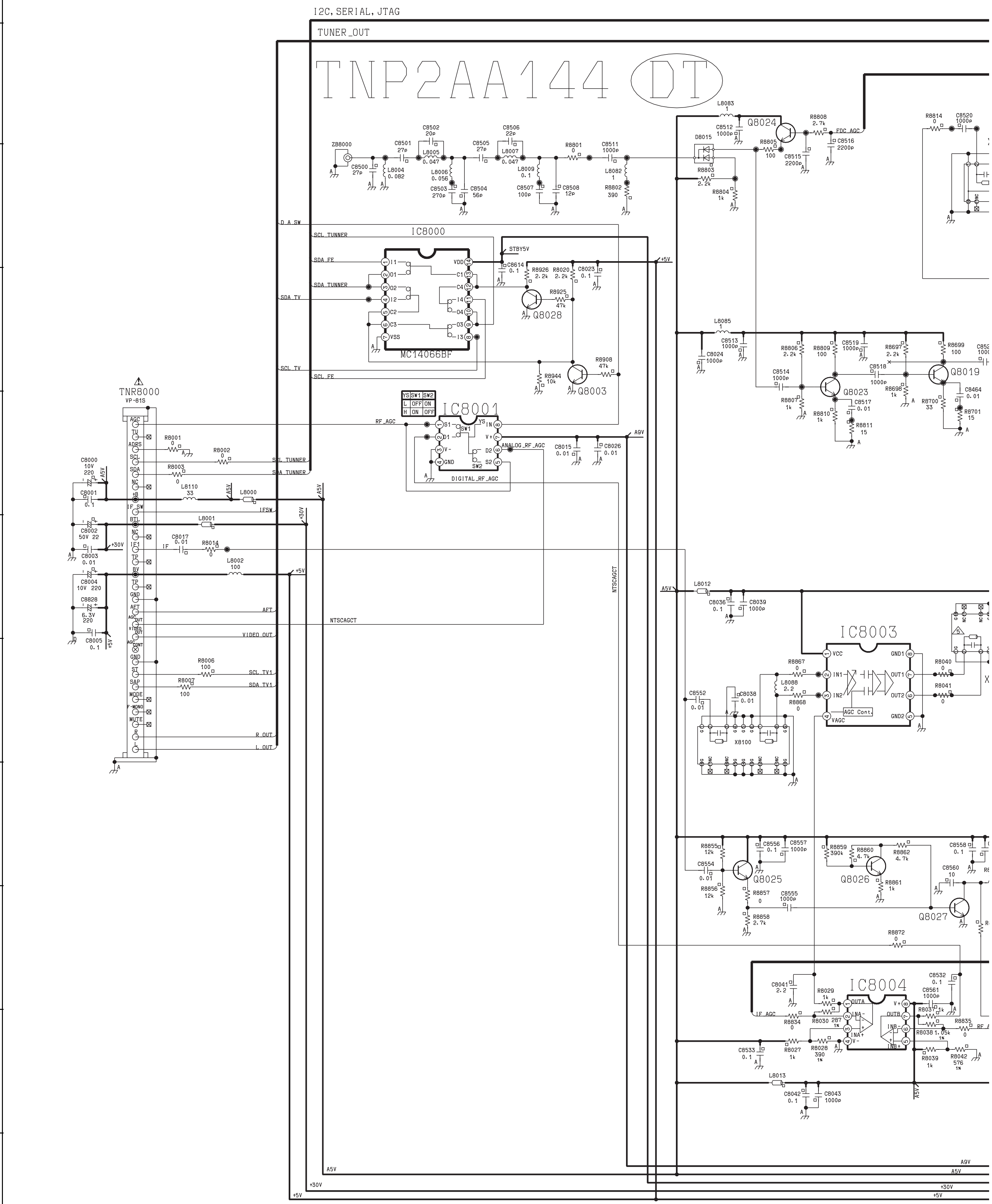
8
TNP2AA132

DG-PCB TOP VIEW TNP2AA132 PT-47WXD63G / PT-53WXD63G


I2C,SERIAL,JTAG
TUNER_OUT
TNP2AA144 DT
TNR8000
VP-81S
IC8000
MC14066BF
IC8001
IC8003
IC8004
X8100
Q8024
Q8028
Q8003
Q8023
Q8019
Q8025
Q8026
Q8027
ZB8000
STBY5V
RF_AGC
ANALOG_RF_AGC
DIGITAL_RF_AGC
NTSCAGCT
SCL_TUNNER
SDA_TUNNER
SCL_TV
SDA_TV
SCL_FE
SDA_FE
D_A_SW
SCL_TV1
SDA_TV1
AFT
VIDEO_OUT
R_OUT
L_OUT
IFSW
IF_AGC
FDC_AGC
AGC Cont.
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
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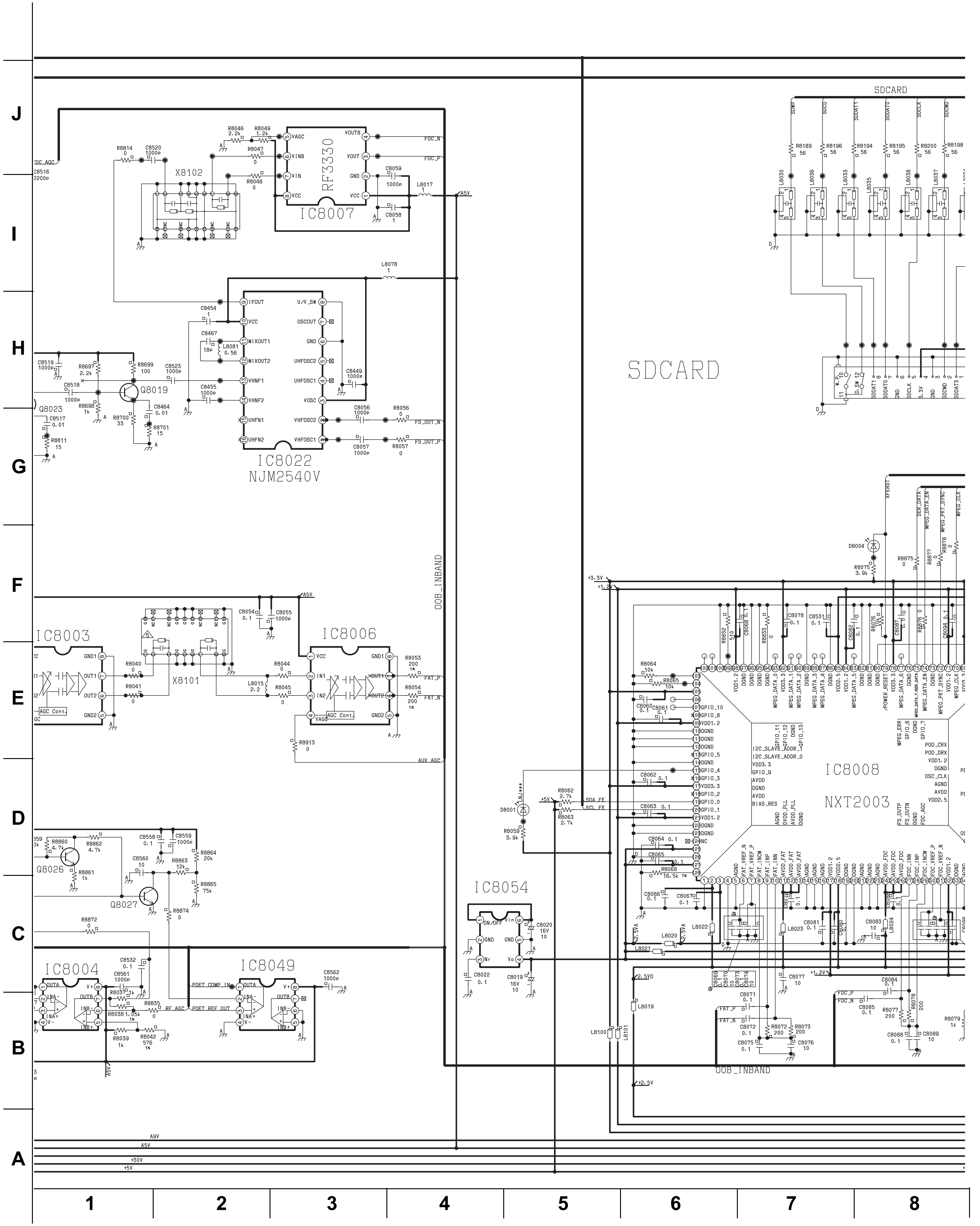
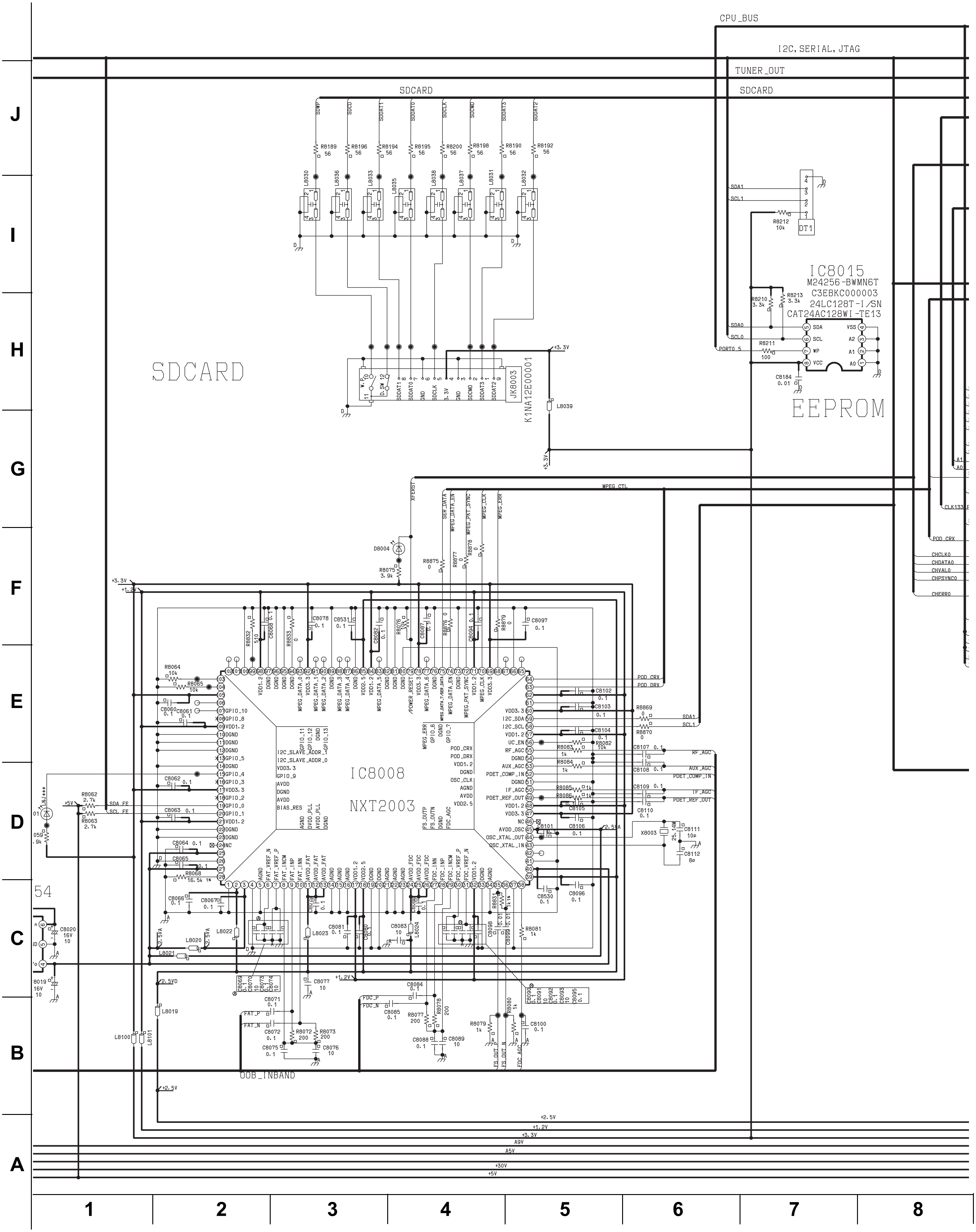
8

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IC8007
RF3330
IC8022
NJM2540V
IC8003
IC8006
X8101
X8102
IC8004
IC8049
IC8054
IC8008
NXT2003
SDCARD
OOB_INBAND
AUX_AGC
FDC_AGC
FDC_N
FDC_P
FAT_P
FAT_N
FS_OUT_N
FS_OUT_P
SDA_FE
SCL_FE
RF_AGC
PDET_COMP_IN
PDET_REF_OUT
Q8019
Q8023
Q8026
Q8027
D8001
D8004
A9V
A5V
+30V
+5V
+3.3V
+1.2V
+2.5V


CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
SDCARD
SDCARD
SDWP
SDCD
SDDAT1
SDDAT0
SDCLK
SDCMD
SDDAT3
SDDAT2
JK8003
K1NA12E00001
+3.3V
L8039
DT1
R8212 10k
IC8015
M24256-BWMN6T
C3EBKC000003
24LC128T-I/SN
CAT24AC128WI-TE13
SDA
SCL
WP
VCC
VSS
A2
A1
A0
EEPROM
PORT0_5
XFERST
MPEG_CTL
SER_DATA
MPEG_DATA_EN
MPEG_PKT_SYNC
MPEG_CLK
MPEG_ERR
D8004
POD_CRX
POD_DRX
SDA1
SCL1
RF_AGC
AUX_AGC
PDET_COMP_IN
IF_AGC
PDET_REF_OUT
IC8008
NXT2003
X8003
25.14M
SDA_FE
SCL_FE
FAT_P
FAT_N
FDC_P
FDC_N
FS_OUT_P
FS_OUT_N
FDC_AGC
OOB_INBAND
+2.5VD
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
CHCLK0
CHDATA0
CHVAL0
CHPSYNC0
CHERR0
CLK133
J
I
H
G
F
E
D
C
B
A
1
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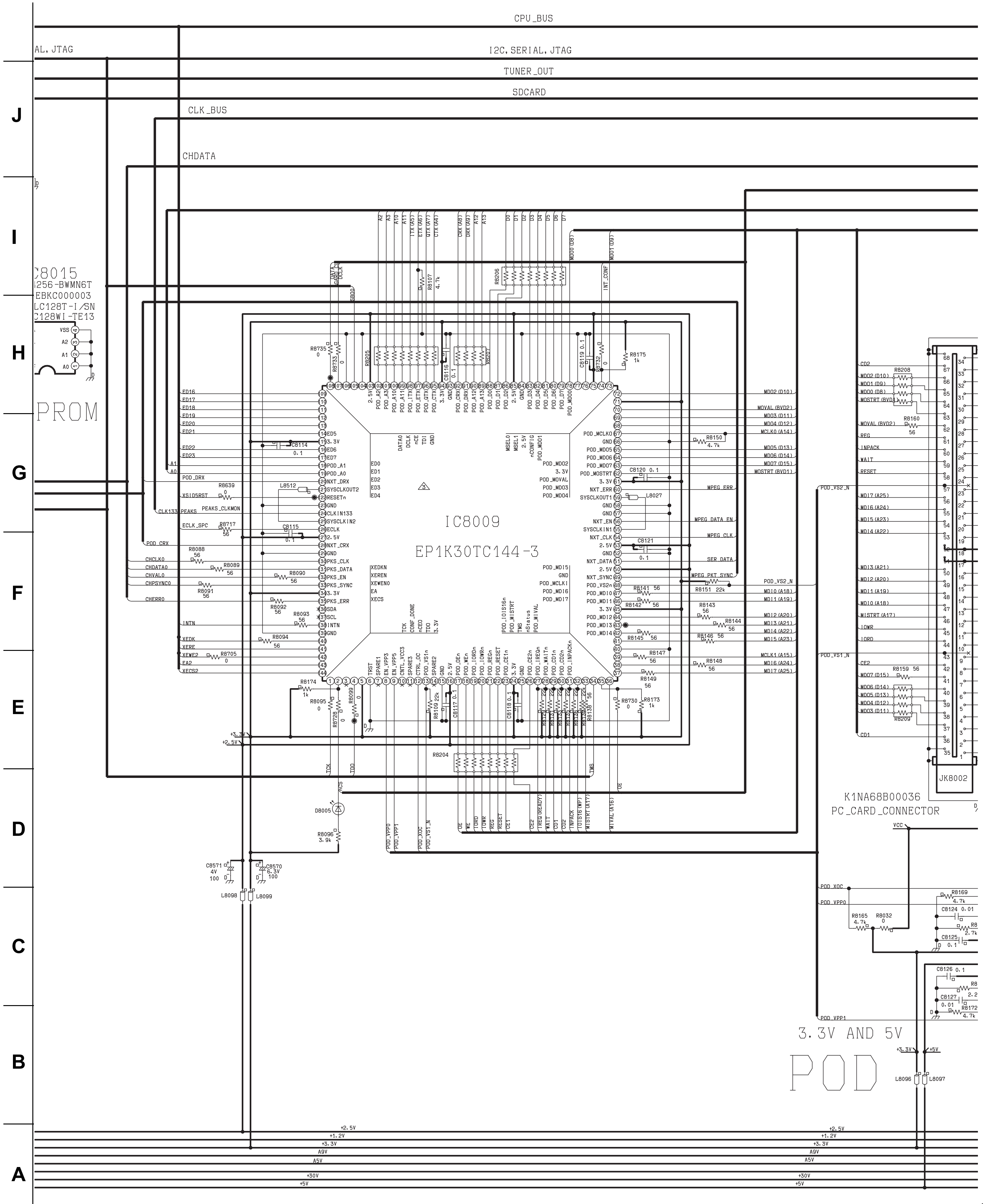

CPU_BUS
AL, JTAG
I2C, SERIAL, JTAG
TUNER_OUT
SDCARD
CLK_BUS
CHDATA
C8015
256-BWMN6T
EBKC000003
LC128T-I/SN
C128WI-TE13
VSS
A2
A1
A0
PROM
IC8009
EP1K30TC144-3
R8735 0
R8733
R8205
C8116 0.1
R8207
R8206
R8107 4.7k
C8119 0.1
R8732 0
R8175 1k
C8114 0.1
L8512
R8639 0
R8717 56
C8115 0.1
R8088 56
R8089 56
R8090 56
R8091 56
R8092 56
R8093 56
R8094 56
R8705 0
R8174 1k
R8095 0
R8728
R8099
R8109 22k
C8117 0.1
C8118 0.1
R8138
R8730 0
R8173 1k
R8204
R8150 4.7k
C8120 0.1
L8027
C8121 0.1
R8141 56
R8151 22k
R8142 56
R8143 56
R8144 56
R8145 56
R8146 56
R8147 56
R8148 56
R8149 56
D8005
R8096 3.9k
C8571 4V 100
C8570 6.3V 100
L8098
L8099
R8208
R8160 56
R8159 56
R8209
JK8002
K1NA68B00036
PC_CARD_CONNECTOR
VCC
POD_XOC
POD_VPP0
POD_VPP1
POD_VS1_N
POD_VS2_N
R8169 4.7k
C8124 0.01
R8165 4.7k
R8032 0
C8125 0.1
C8126 0.1
C8127 0.01
R8172 4.7k
3.3V AND 5V
POD
L8096
L8097
+3.3V
+5V
+2.5V
+1.2V
A9V
A5V
+30V
MPEG_ERR
MPEG_DATA_EN
MPEG_CLK
SER_DATA
MPEG_PKT_SYNC
J
I
H
G
F
E
D
C
B
A
1
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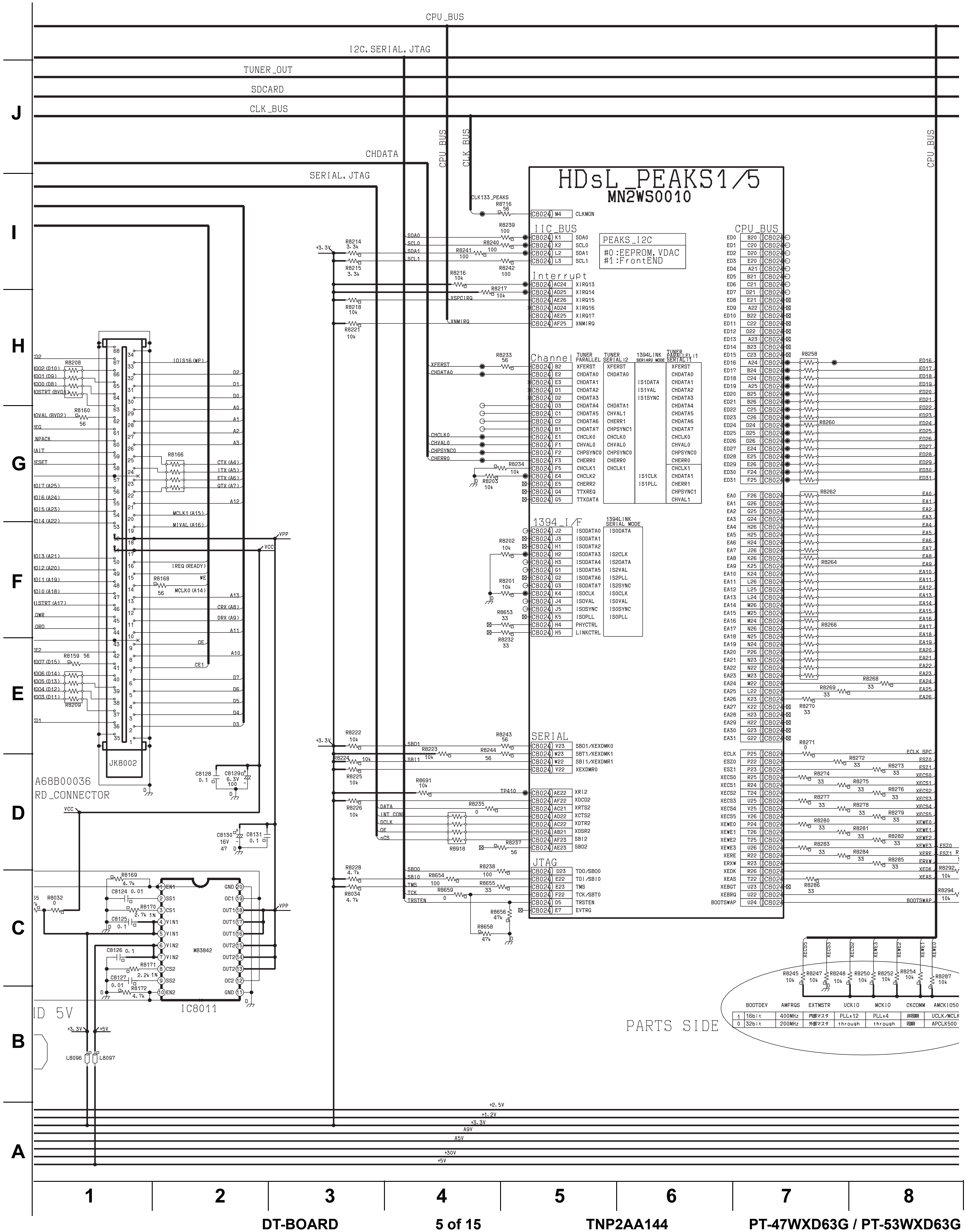
7
8


CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
SDCARD
CLK_BUS
CHDATA
SERIAL, JTAG
HDsL_PEAKS1/5
MN2WS0010
CLK133_PEAKS
CLKMON
IIC_BUS
PEAKS_I2C
#0:EEPROM, VDAC
#1:FrontEND
Interrupt
XIRQ13
XIRQ14
XIRQ15
XIRQ16
XIRQ17
XNMIRQ
XSPCIRQ
CPU_BUS
Channel
TUNER PARALLEL
TUNER SERIAL:2
1394LINK SERIARU MODE
TUNER PARALLEL:1 SERIAL:1
1394_I/F
1394LINK SERIAL MODE
PHYCTRL
LINKCTRL
SERIAL
SB0I/XEXDMK0
SBT1/XEXDMK1
SBI1/XEXDMR1
XEXDMR0
JTAG
TDO/SBO0
TDI/SBI0
TMS
TCK/SBT0
TRSTEN
EVTRG
TP410
IC8024
JK8002
A68B00036
RD_CONNECTOR
MB3842
IC8011
VPP
VCC
L8096
L8097
PARTS SIDE
XECS5
XECS3
XECS2
XEWE3
XEWE2
XEWE1
XEWE0
R8245 10k
R8247 10k
R8248 10k
R8250 10k
R8252 10k
R8254 10k
R8287 10k
BOOTDEV
AMFRQS
EXTMSTR
UCKIO
MCKIO
CKCOMM
AMCKIO50
1
16bit
400MHz
内部マスタ
PLLx12
PLLx4
非同期
UCLK/MCLK
0
32bit
200MHz
外部マスタ
through
through
同期
APCLK500
BOOTSWAP
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
1
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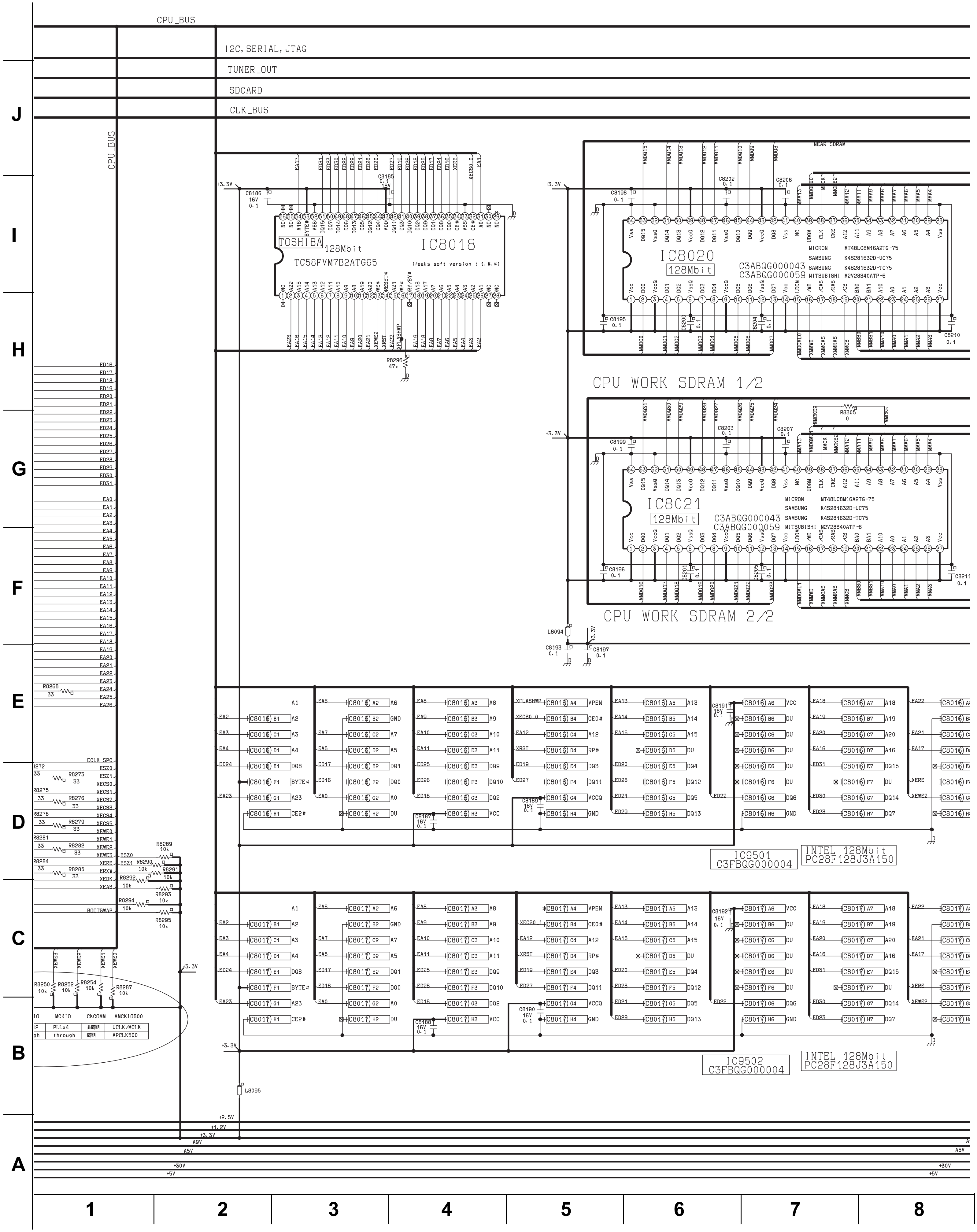
CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
SDCARD
CLK_BUS
TOSHIBA
128Mbit
IC8018
TC58FVM7B2ATG65
(Peaks soft version : 1.#.#)
R8296 47k
C8185 0.1 16V
C8186 16V 0.1
+3.3V
NEAR SDRAM
IC8020
128Mbit
C3ABQG000043
C3ABQG000059
MICRON MT48LC8M16A2TG-75
SAMSUNG K4S281632D-UC75
SAMSUNG K4S281632D-TC75
MITSUBISHI M2V28S40ATP-6
CPU WORK SDRAM 1/2
IC8021
128Mbit
C3ABQG000043
C3ABQG000059
CPU WORK SDRAM 2/2
R8305 0
L8094
C8193 0.1
C8197 0.1
IC9501
C3FBQG000004
INTEL 128Mbit
PC28F128J3A150
IC9502
C3FBQG000004
INTEL 128Mbit
PC28F128J3A150
L8095
R8268 33
R8273 33
R8276 33
R8279 33
R8282 33
R8285 33
R8289 10k
R8290 10k
R8291 10k
R8292 10k
R8293 10k
R8294 10k
R8295 10k
R8250 10k
R8252 10k
R8254 10k
R8287 10k
ECLK_SPC
BOOTSWAP
XEWE3
XEWE2
XEWE1
XEWE0
MCKIO
CKCOMM
AMCKIO500
PLLx4
through
UCLK/MCLK
APCLK500
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
A
B
C
D
E
F
G
H
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J
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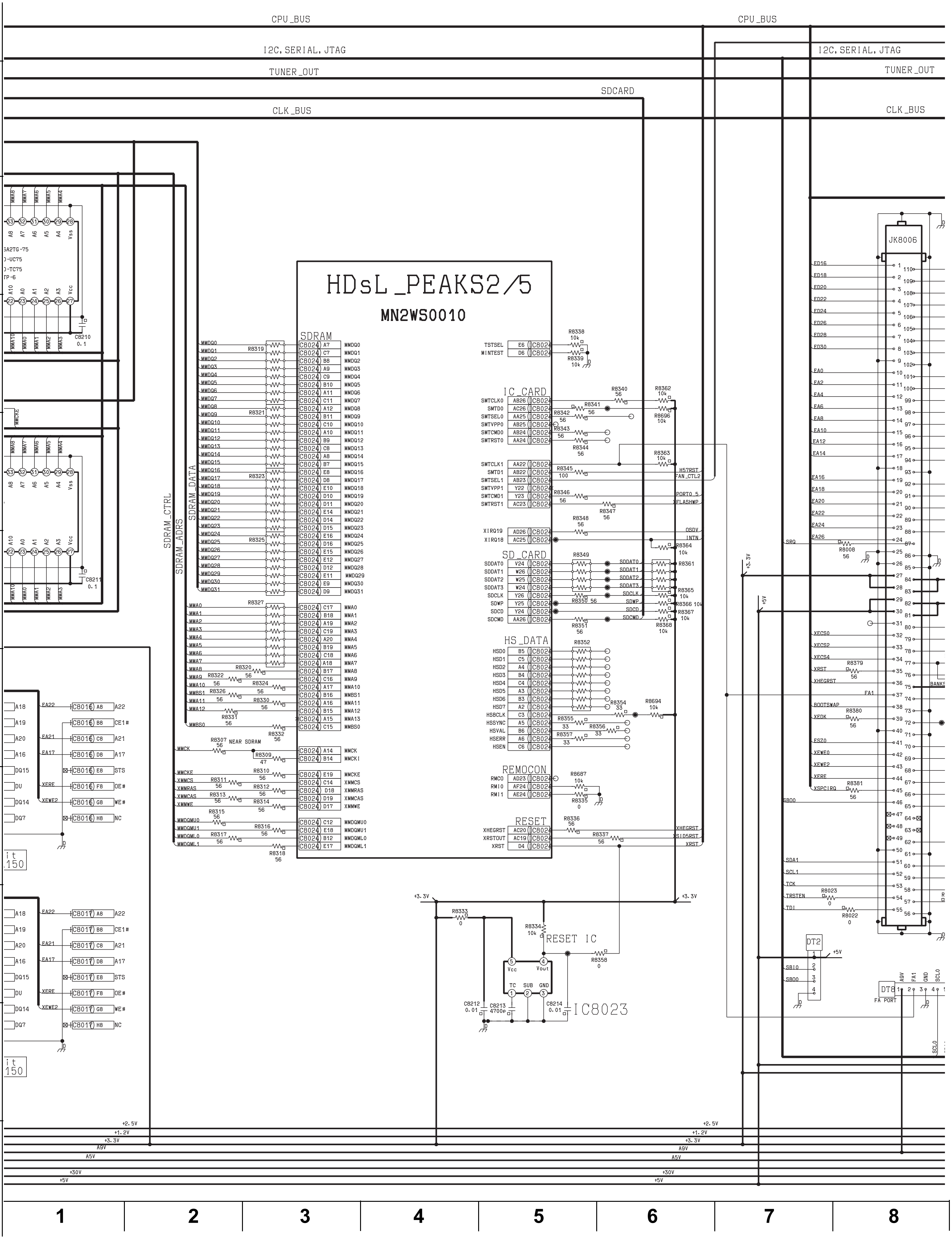
CPU_BUS
I2C,SERIAL,JTAG
TUNER_OUT
SDCARD
CLK_BUS
HDsL_PEAKS2/5
MN2WS0010
SDRAM
IC_CARD
SD_CARD
HS_DATA
REMOCON
RESET
SDRAM_CTRL
SDRAM_ADRS
SDRAM_DATA
TSTSEL
MINTEST
R8338 10k
R8339 10k
RESET IC
IC8023
JK8006
DT2
DT8
FA PORT
C8210 0.1
C8211 0.1
+3.3V
+5V
+2.5V
+1.2V
A9V
A5V
+30V
J
I
H
G
F
E
D
C
B
A
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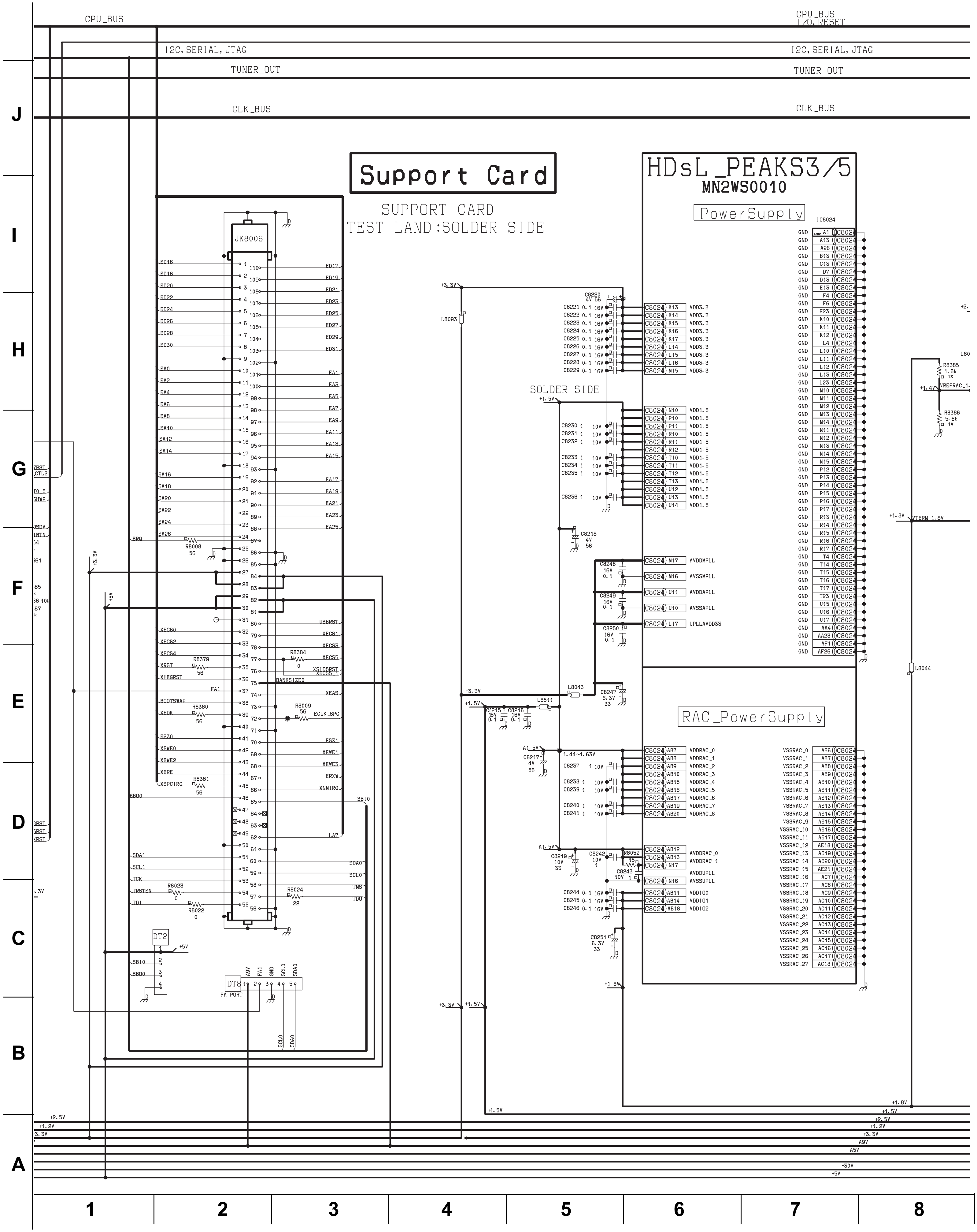
CPU_BUS
CPU_BUS
I/O_RESET
I2C, SERIAL, JTAG
TUNER_OUT
CLK_BUS
Support Card
SUPPORT CARD
TEST LAND:SOLDER SIDE
JK8006
HDsL_PEAKS3/5
MN2WS0010
PowerSupply
IC8024
RAC_PowerSupply
SOLDER SIDE
DT2
DT8
FA PORT
SB10
SB00
SDA0
SCL0
A9V
FA1
GND
SCL0
SDA0
+3.3V
+1.5V
+1.8V
A1.5V
+5V
L8093
L8043
L8511
L8044
C8220
C8218
C8247
C8248
C8249
C8250
C8251
R8008
R8379
R8380
R8381
R8384
R8009
R8023
R8022
R8024
R8052
R8385
R8386
VDD3.3
VDD1.5
AVDDMPLL
AVSSMPLL
AVDDAPLL
AVSSAPLL
UPLLAVDD33
VDDRAC_0
VDDRAC_8
AVDDRAC_0
AVDDRAC_1
AVDDUPLL
AVSSUPLL
VDDIO0
VDDIO1
VDDIO2
VSSRAC_0
VSSRAC_27
VREFRAC_1.4V
VTERM_1.8V
USBRST
XECS1
XECS3
XECS5
XSIDSRST
BANKSIZE0
ECLK_SPC
XEAS
ESZ1
XEWE1
XEWE3
ERXW
XNMIRQ
LA7
SDA1
SCL1
TCK
TRSTEN
TDI
TMS
TDO
XSPCIRQ
SRQ
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
J
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G
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E
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C
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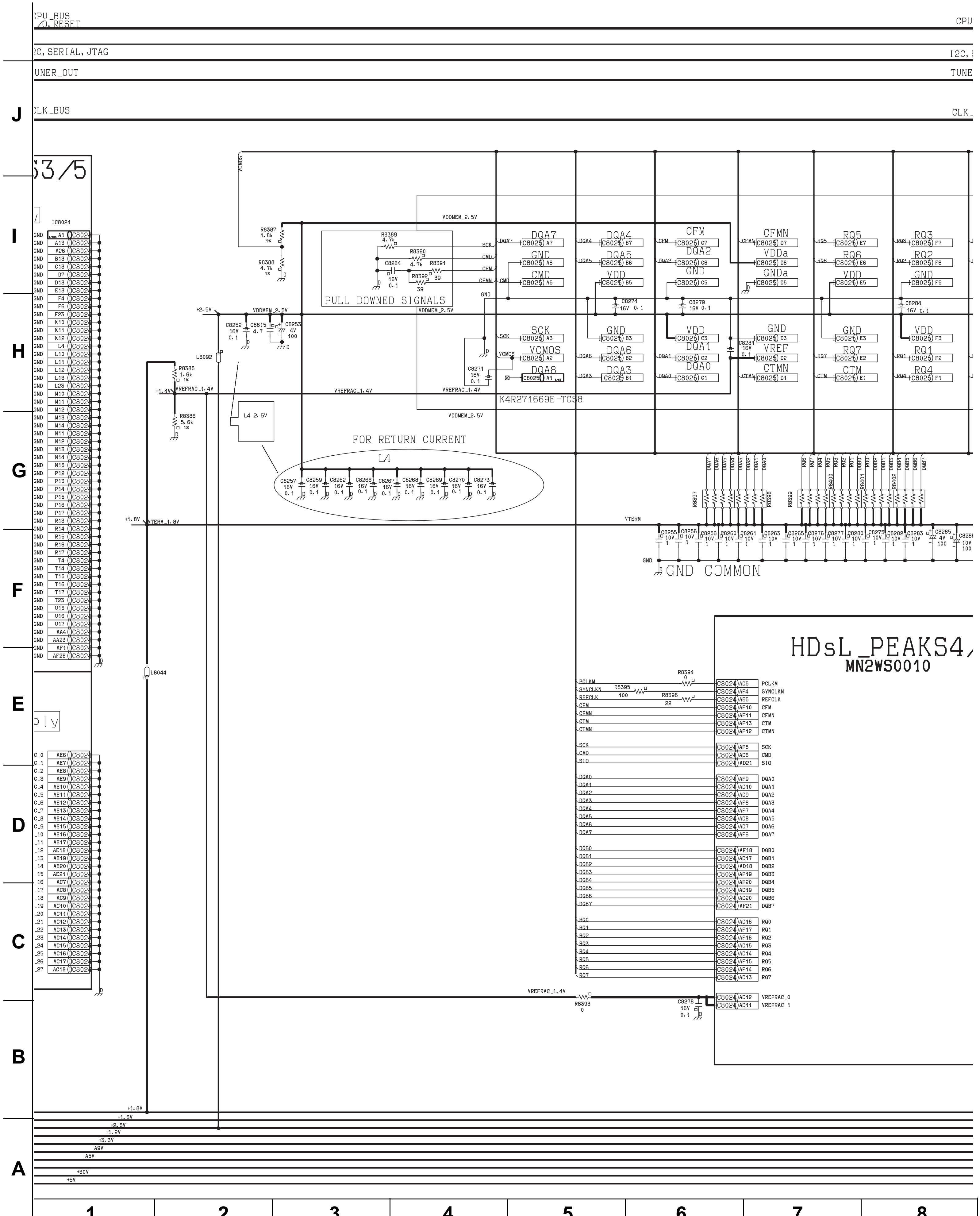
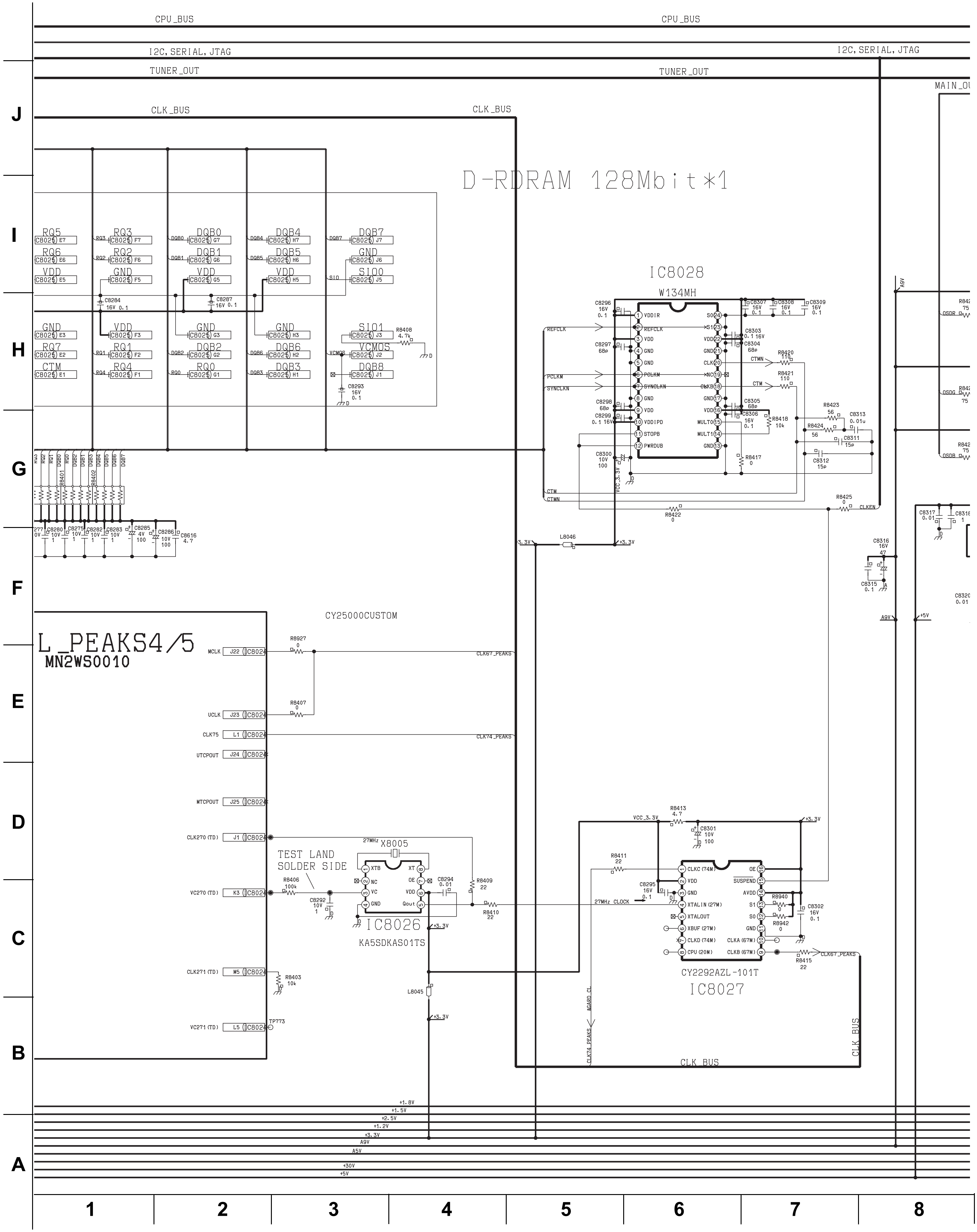

CPU_BUS
I/O,RESET
I2C,SERIAL,JTAG
TUNER_OUT
CLK_BUS
IC8024
VCMOS
VDDMEM_2.5V
PULL DOWNED SIGNALS
R8387 1.8k 1%
R8388 4.7k 1%
R8389 4.7k
R8390 4.7k
R8391 39
R8392 39
C8264 16V 0.1
DQA7 DQA4 CFM CFMN RQ5 RQ3
GND DQA5 DQA2 VDDa RQ6 RQ2
CMD VDD GND GNDa VDD GND
SCK GND VDD GND GND VDD
VCMOS DQA6 DQA1 VREF RQ7 RQ1
DQA8 DQA3 DQA0 CTMN CTM RQ4
K4R271669E-TCS8
C8274 16V 0.1
C8279 16V 0.1
C8281 16V 0.1
C8284 16V 0.1
C8271 16V 0.1
C8252 16V 0.1
C8615 4.7
C8253 4V 100
L8092
R8385 1.6k 1%
R8386 5.6k 1%
VREFRAC_1.4V
+1.4V
+2.5V
L4 2.5V
FOR RETURN CURRENT
L4
C8257 C8259 C8262 C8266 C8267 C8268 C8269 C8270 C8273 16V 0.1
+1.8V
VTERM_1.8V
VTERM
R8397 R8398 R8399 R8400 R8401 R8402
C8255 C8256 C8258 C8260 C8261 C8263 C8265 C8276 C8277 C8280 C8275 C8282 C8283 10V 1
C8285 4V 100
C8286 10V 100
GND COMMON
L8044
HDsL_PEAKS4/
MN2WS0010
R8394 0
R8395 100
R8396 22
PCLKM SYNCLKN REFCLK CFM CFMN CTM CTMN
SCK CMD SIO
DQA0 DQA1 DQA2 DQA3 DQA4 DQA5 DQA6 DQA7
DQB0 DQB1 DQB2 DQB3 DQB4 DQB5 DQB6 DQB7
RQ0 RQ1 RQ2 RQ3 RQ4 RQ5 RQ6 RQ7
VREFRAC_0 VREFRAC_1
R8393 0
C8278 16V 0.1
+1.8V +1.5V +2.5V +1.2V +3.3V A9V A5V +30V +5V
J I H G F E D C B A
1 2 3 4 5 6 7 8


CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
CLK_BUS
MAIN_OU
D-RDRAM 128Mbit*1
RQ5
RQ3
DQB0
DQB4
DQB7
RQ6
RQ2
DQB1
DQB5
GND
VDD
GND
VDD
VDD
SIO0
GND
VDD
GND
GND
SIO1
RQ7
RQ1
DQB2
DQB6
VCMOS
CTM
RQ4
RQ0
DQB3
DQB8
C8284 16V 0.1
C8287 16V 0.1
R8408 4.7k
C8293 16V 0.1
R8401
R8402
C8280 10V 1
C8275 10V 1
C8282 10V 1
C8283 10V 1
C8285 4V 100
C8286 10V 100
C8616 4.7
IC8028
W134MH
VDDIR
REFCLK
VDD
GND
GND
PCLKM
SYNCLKN
GND
VDD
VDDIPD
STOPB
PWRDWB
SO
S1
VDD
GND
CLK
NC
CLKB
GND
VDD
MULT0
MULT1
GND
C8296 16V 0.1
C8297 68p
C8298 68p
C8299 0.1 16V
C8300 10V 100
C8307 16V 0.1
C8308 16V 0.1
C8309 16V 0.1
C8303 0.1 16V
C8304 68p
C8305 68p
C8306 16V 0.1
R8418 10k
R8417 0
R8420 110
R8421 110
CTMN
CTM
R8423 56
R8424 56
C8313 0.01u
C8311 15p
C8312 15p
REFCLK
PCLKM
SYNCLKN
CTM
CTMN
VCC_3.3V
R8422 0
R8425 0
CLKEN
A9V
OSDR
OSDG
OSDB
R842 75
C8317 0.01
C8316 16V 47
C8315 0.1
C8320 0.01
A9V
+5V
+3.3V
L8046
+3.3V
L_PEAKS4/5
MN2WS0010
CY25000CUSTOM
MCLK J22 IC8024
UCLK J23 IC8024
CLK75 L1 IC8024
UTCPOUT J24 IC8024
MTCPOUT J25 IC8024
CLK270 (TD) J1 IC8024
VC270 (TD) K3 IC8024
CLK271 (TD) M5 IC8024
VC271 (TD) L5 IC8024
R8927 0
R8407 0
CLK67_PEAKS
CLK74_PEAKS
27MHz X8005
TEST LAND
SOLDER SIDE
R8406 100k
C8292 10V 1
XTB
NC
VC
GND
XT
OE
VDD
Qout
C8294 0.01
R8409 22
R8410 22
IC8026
KA5SDKAS01TS
+3.3V
R8403 10k
L8045
+3.3V
TP773
VCC_3.3V
R8413 4.7
C8301 10V 100
+3.3V
R8411 22
C8295 16V 0.1
27MHz_CLOCK
CLKC (74M)
VDD
GND
XTALIN (27M)
XTALOUT
XBUF (27M)
CLKD (74M)
CPU (20M)
OE
SUSPEND
AVDD
S1
S0
GND
CLKA (67M)
CLKB (67M)
R8940 0
R8942 0
C8302 16V 0.1
R8415 22
CLK67_PEAKS
CY2292AZL-101T
IC8027
CLK74_PEAKS
CARD_CL
CLK_BUS
CLK_BUS
+1.8V
+1.5V
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
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A
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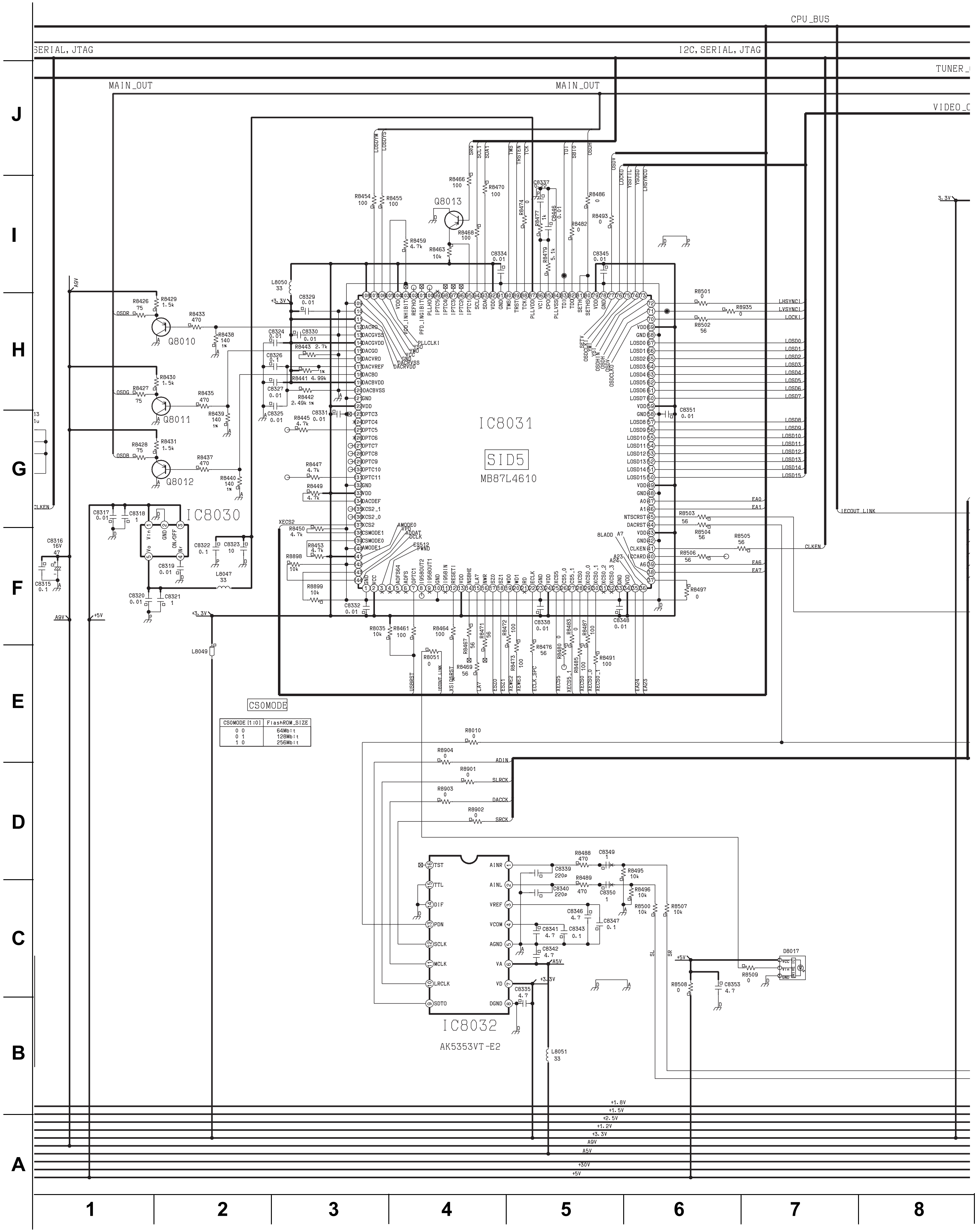
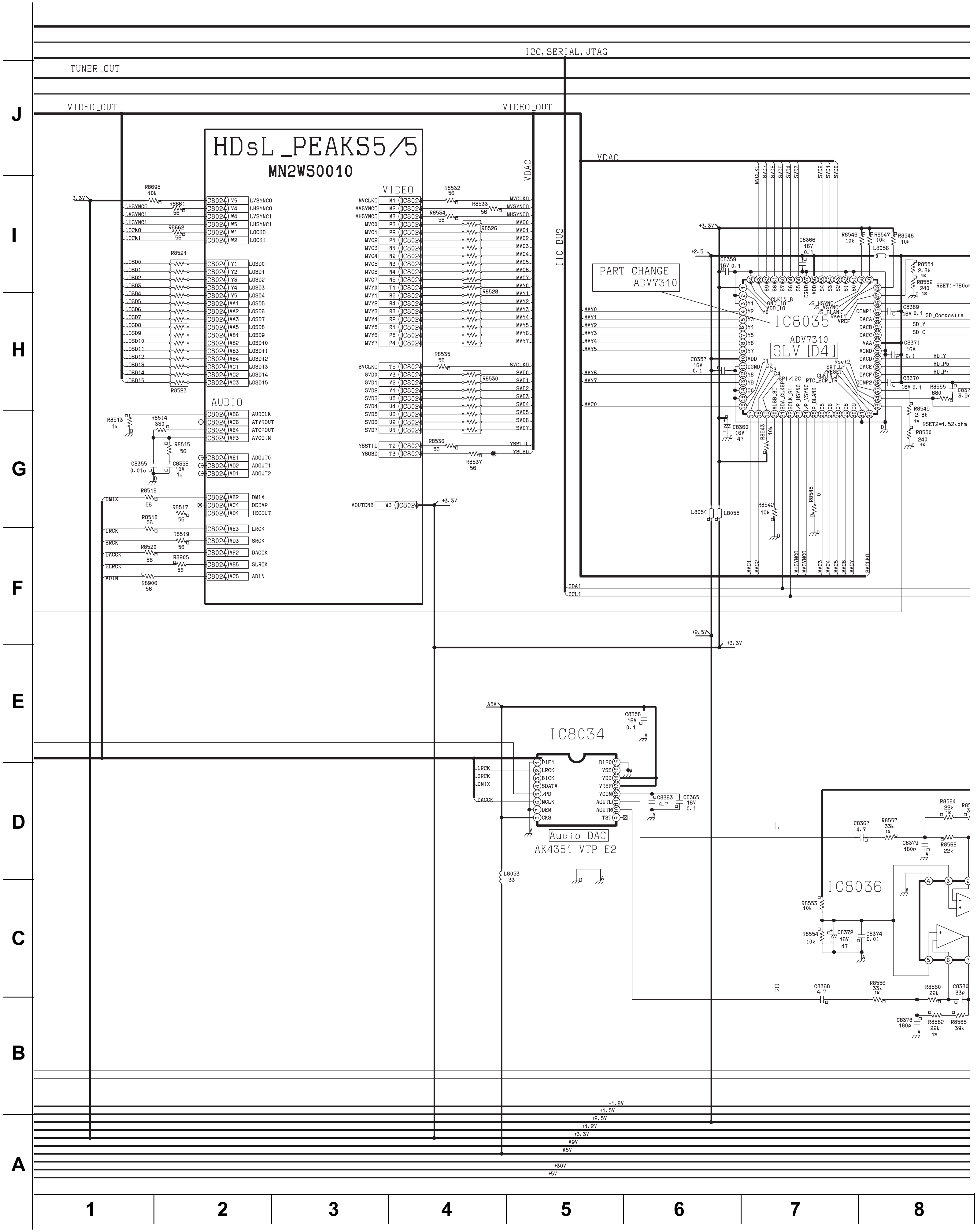

CPU_BUS
SERIAL,JTAG
I2C,SERIAL,JTAG
TUNER_
MAIN_OUT
MAIN_OUT
VIDEO_
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IC8031
SID5
MB87L4610
IC8030
IC8032
AK5353VT-E2
Q8010
Q8011
Q8012
Q8013
D8017
CS0MODE
CLKEN
LECOUT_LINK
+1.8V
+1.5V
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V

CS0MODE [1:0]	FlashROM_SIZE
0 0	64Mbit
0 1	128Mbit
1 0	256Mbit


I2C, SERIAL, JTAG
TUNER_OUT
VIDEO_OUT
VDAC
IIC_BUS
HDsL_PEAKS5/5
MN2WS0010
VIDEO
AUDIO
IC8035
ADV7310
SLV [D4]
PART CHANGE ADV7310
RSET1=760ohm
RSET2=1.52kohm
SD_Composite
SD_Y
SD_C
HD_Y
HD_Pb
HD_Pr
SDA1
SCL1
IC8034
Audio DAC
AK4351-VTP-E2
IC8036
L
R
+1.8V
+1.5V
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
J
I
H
G
F
E
D
C
B
A
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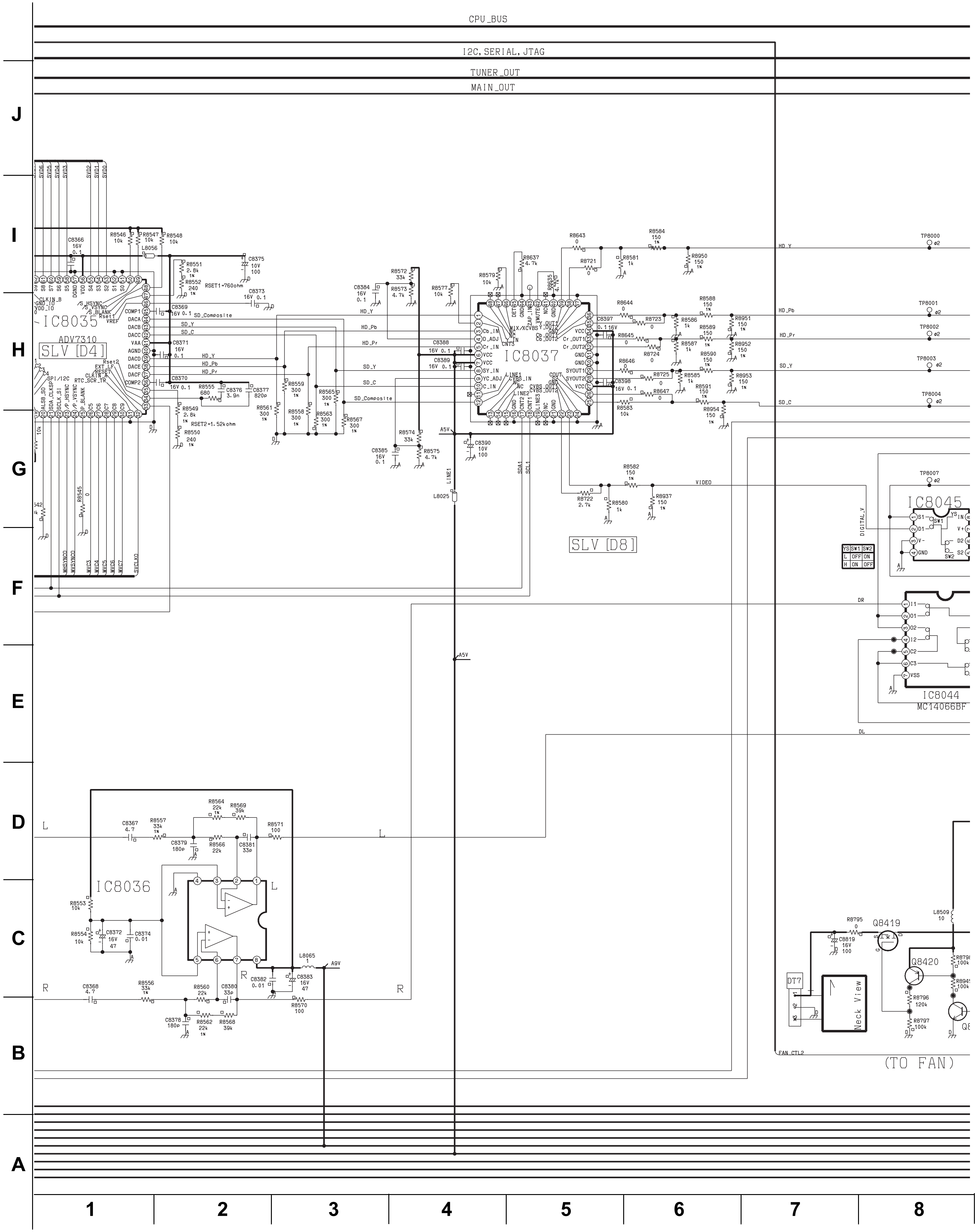
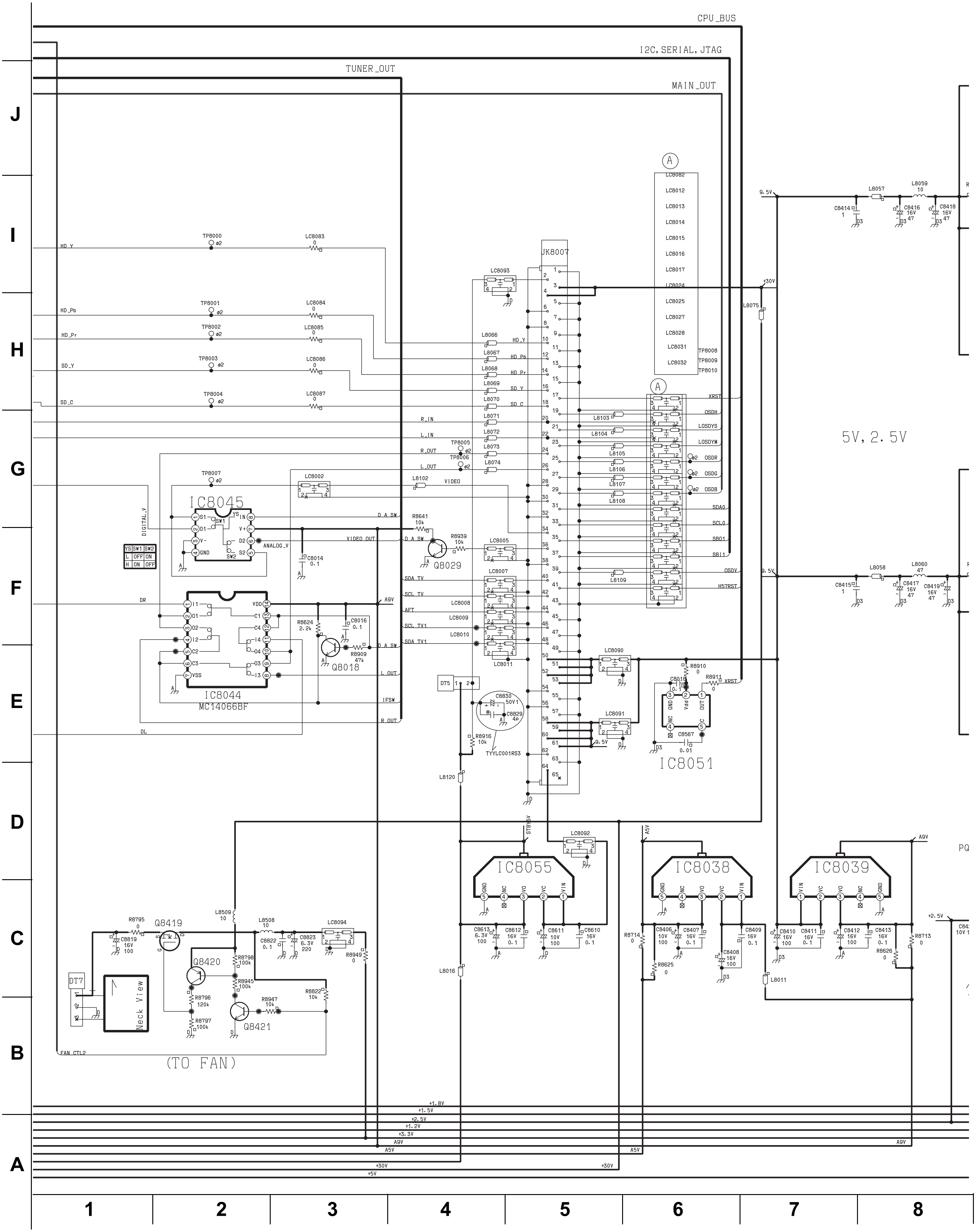

CPU_BUS
I2C,SERIAL,JTAG
TUNER_OUT
MAIN_OUT
J
I
H
G
F
E
D
C
B
A
IC8035
ADV7310
SLV [D4]
IC8037
SLV [D8]
IC8036
IC8045
IC8044
MC14066BF
HD_Y
HD_Pb
HD_Pr
SD_Y
SD_C
SD_Composite
VIDEO
DIGITAL_V
DR
DL
TP8000
TP8001
TP8002
TP8003
TP8004
TP8007
A5V
A9V
LINE1
SDA1
SCL1
L8025
L8056
L8065
L8509
RSET1=760ohm
RSET2=1.52kohm
L
R
Q8419
Q8420
DT7
Neck View
FAN_CTL2
(TO FAN)
YS SW1 SW2
L OFF ON
H ON OFF
1
2
3
4
5
6
7
8


CPU_BUS
I2C, SERIAL, JTAG
TUNER_OUT
MAIN_OUT
HD_Y
HD_Pb
HD_Pr
SD_Y
SD_C
TP8000
TP8001
TP8002
TP8003
TP8004
TP8005
TP8006
TP8007
LC8083
LC8084
LC8085
LC8086
LC8087
JK8007
LC8093
L8066
L8067
L8068
L8069
L8070
L8071
L8072
L8073
L8074
R_IN
L_IN
R_OUT
L_OUT
VIDEO
L8102
LC8002
IC8045
YS
SW1
SW2
ANALOG_V
DIGITAL_V
C8014 0.1
D.A.SW
VIDEO OUT
R8641 10k
R8939 10k
Q8029
LC8005
LC8007
LC8008
LC8009
LC8010
LC8011
SDA TV
SCL TV
AFT
SCL TV1
SDA TV1
DR
DL
IC8044
MC14066BF
A9V
R8624 2.2k
C8016 0.1
Q8018
R8909 47k
L OUT
IFSW
R OUT
DT5
C8830 50V1
C8829 4p
R8916 10k
TYYLC001RS3
L8120
L8016
A
LC8082
LC8012
LC8013
LC8014
LC8015
LC8016
LC8017
LC8024
LC8025
LC8027
LC8028
LC8031
LC8032
TP8008
TP8009
TP8010
XRST
OSDH
LOSDYS
LOSDYM
OSDR
OSDG
OSDB
SDA0
SCL0
SBO1
SBI1
OSDV
H57RST
L8103
L8104
L8105
L8106
L8107
L8108
L8109
LC8090
LC8091
R8910 0
C8018 0.1
R8911 0
C8567 0.01
IC8051
+30V
L8075
9.5V
L8057
L8059 10
C8414 1
C8416 16V 47
C8418 16V 47
5V, 2.5V
L8058
L8060 47
C8415 1
C8417 16V 47
C8419 16V 47
STB5V
LC8092
IC8055
IC8038
IC8039
A5V
A9V
GND
NC
VO
VC
VIN
C8613 6.3V 100
C8612 16V 0.1
C8611 10V 100
C8610 16V 0.1
R8714 0
C8406 10V 100
C8407 16V 0.1
C8409 16V 0.1
C8408 16V 100
R8625 0
L8011
C8410 16V 100
C8411 16V 0.1
C8412 16V 100
C8413 16V 0.1
R8626 0
R8713 0
PQ
+2.5V
R8795 0
Q8419
C8819 16V 100
L8509 10
L8508 10
C8822 0.1
C8823 6.3V 220
LC8094
R8949 0
Q8420
R8798 100k
R8945 100k
R8796 120k
R8797 100k
R8947 10k
R8822 10k
Q8421
DT7
Neck View
FAN_CTL2
(TO FAN)
+1.8V
+1.5V
+2.5V
+1.2V
+3.3V
A9V
A5V
+30V
+5V
YS SW1 SW2
L OFF ON
H ON OFF
J
I
H
G
F
E
D
C
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A
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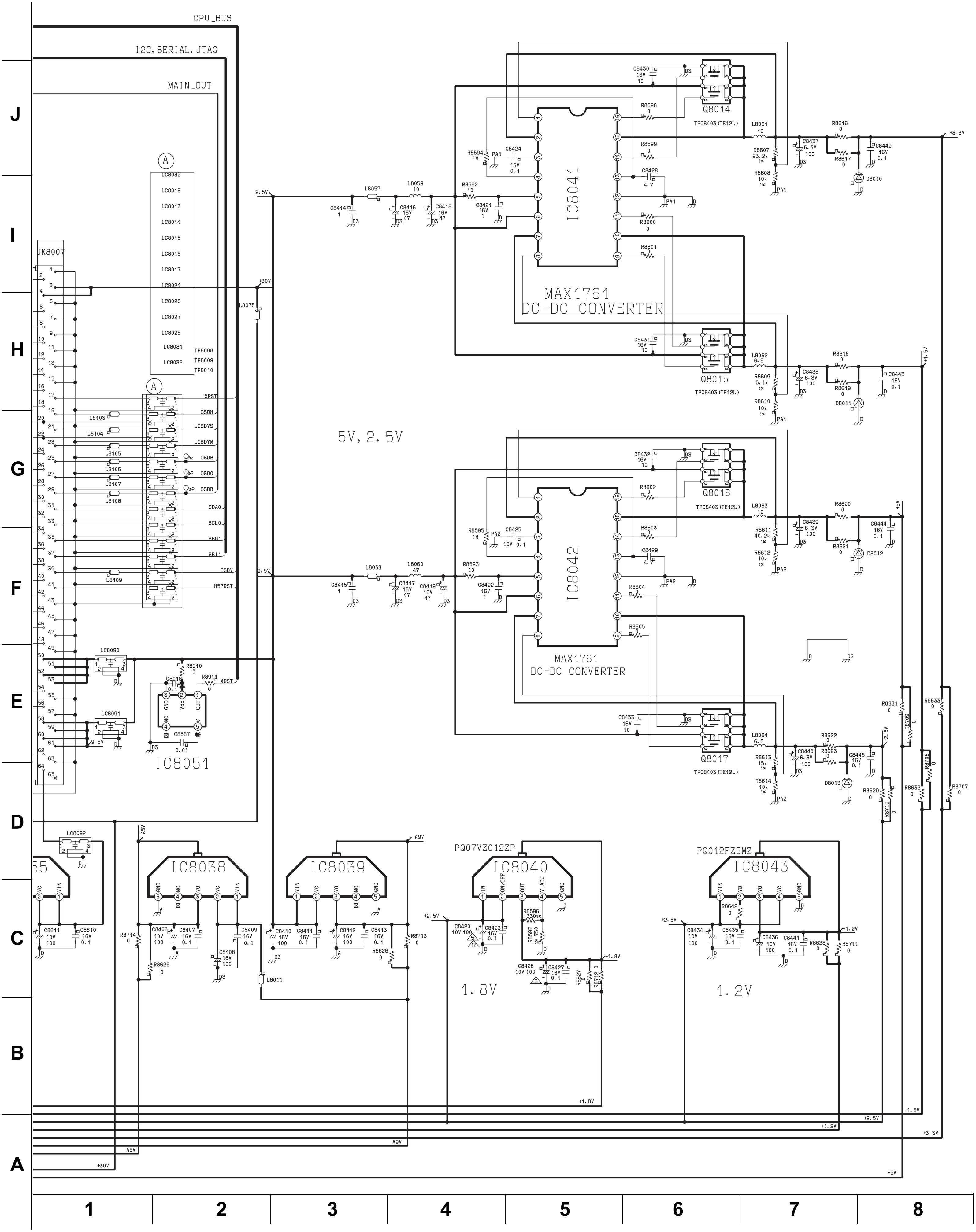
CPU_BUS
I2C,SERIAL,JTAG
MAIN_OUT
JK8007
IC8051
IC8041
MAX1761
DC-DC CONVERTER
IC8042
MAX1761
DC-DC CONVERTER
Q8014
Q8015
Q8016
Q8017
TPC8403(TE12L)
5V, 2.5V
+3.3V
+1.5V
+5V
+2.5V
9.5V
+30V
A5V
A9V
IC8038
IC8039
PQ07VZ012ZP
IC8040
PQ012FZ5MZ
IC8043
1.8V
1.2V
+1.8V
+1.2V
XRST
OSDH
LOSDYS
LOSDYM
OSDR
OSDG
OSDB
SDA0
SCL0
SB01
SBI1
OSDV
H57RST
1
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J
I
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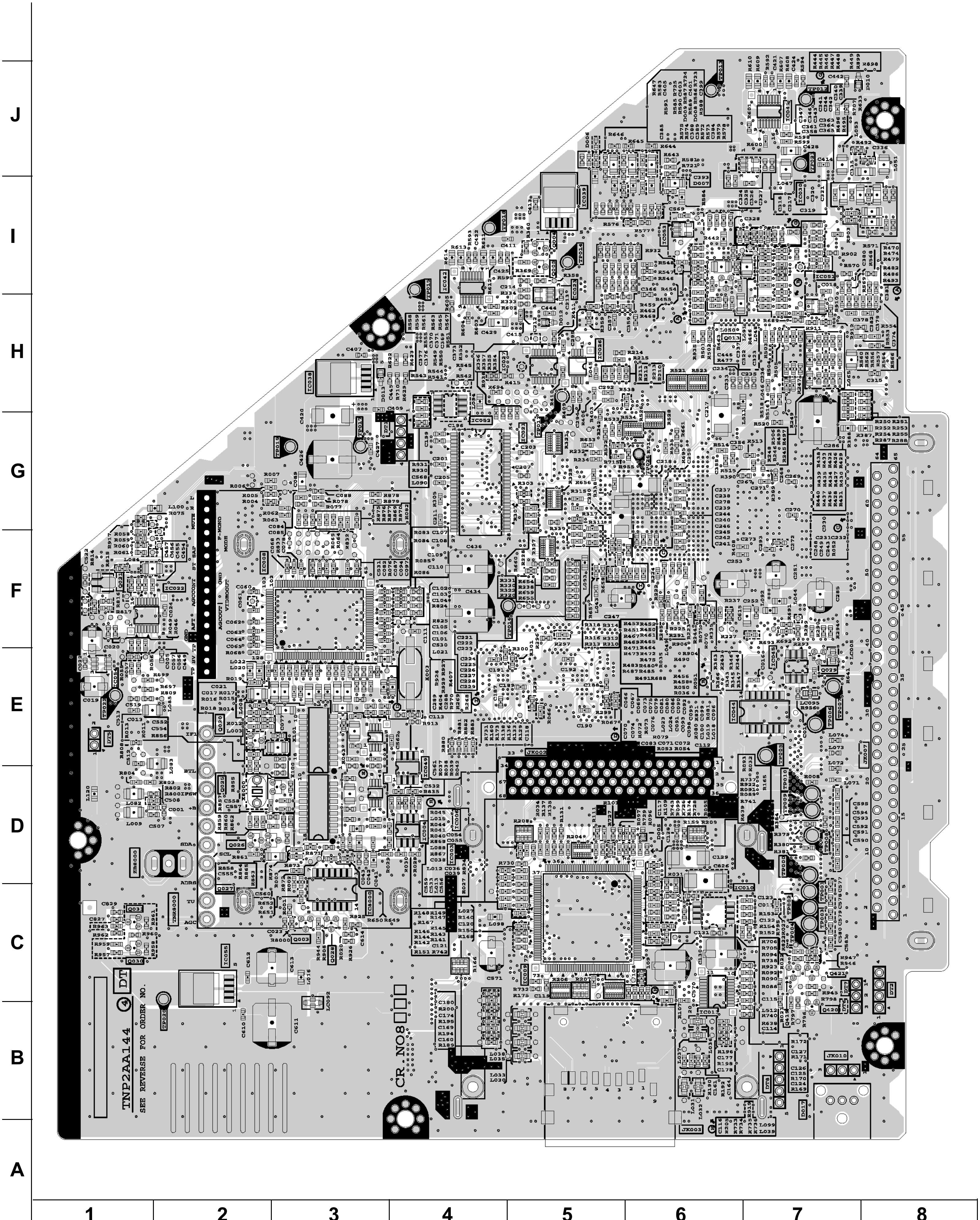
J
I
H
G
F
E
D
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B
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1
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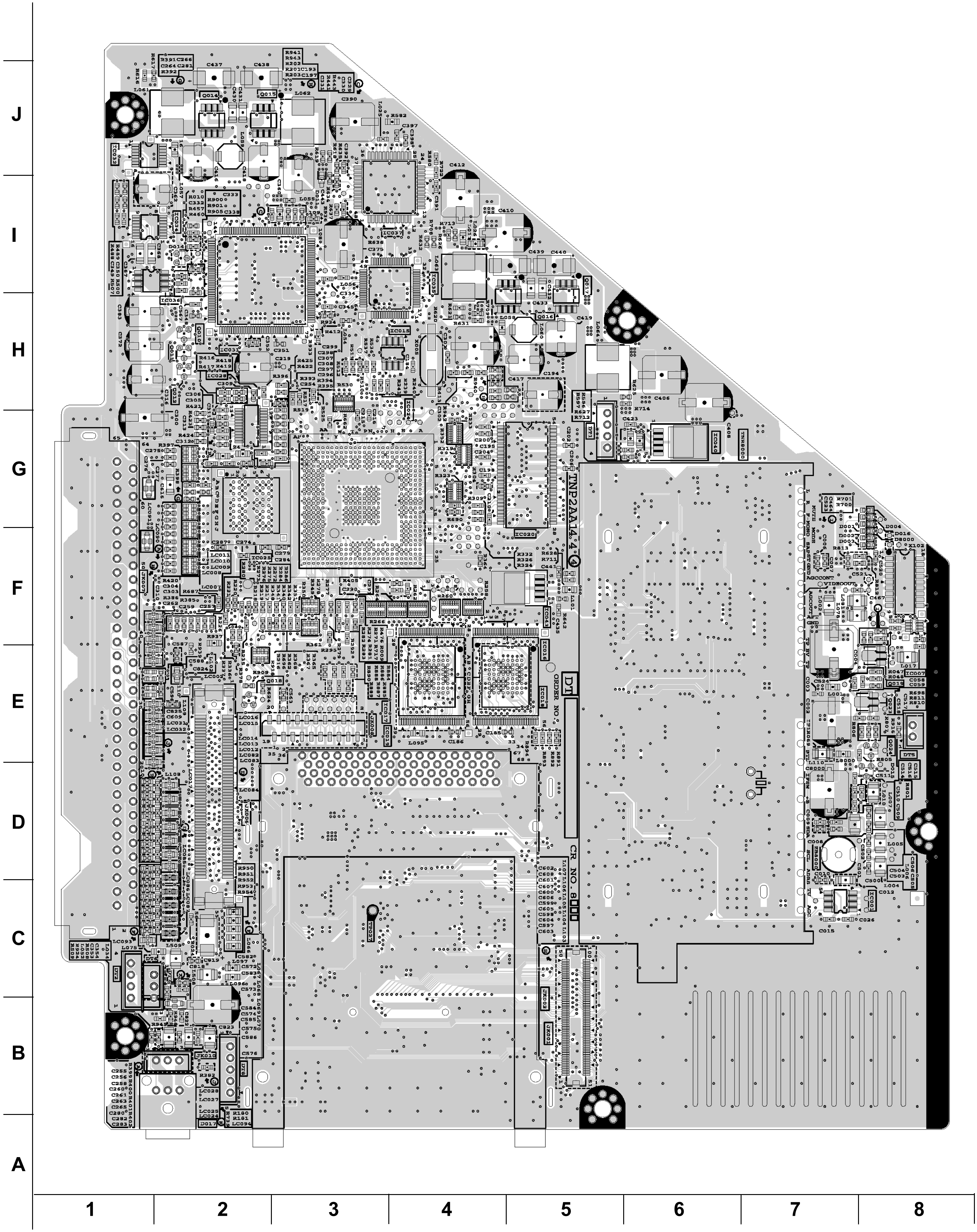
7
8
TNP2AA144
SEE REVERSE FOR ORDER NO.
CR. NO8
DT
JK002
JK003
JK010

DT-PCB BOTTOM VIEW TNP2AA144 PT-47WXD63G / PT-53WXD63G


J
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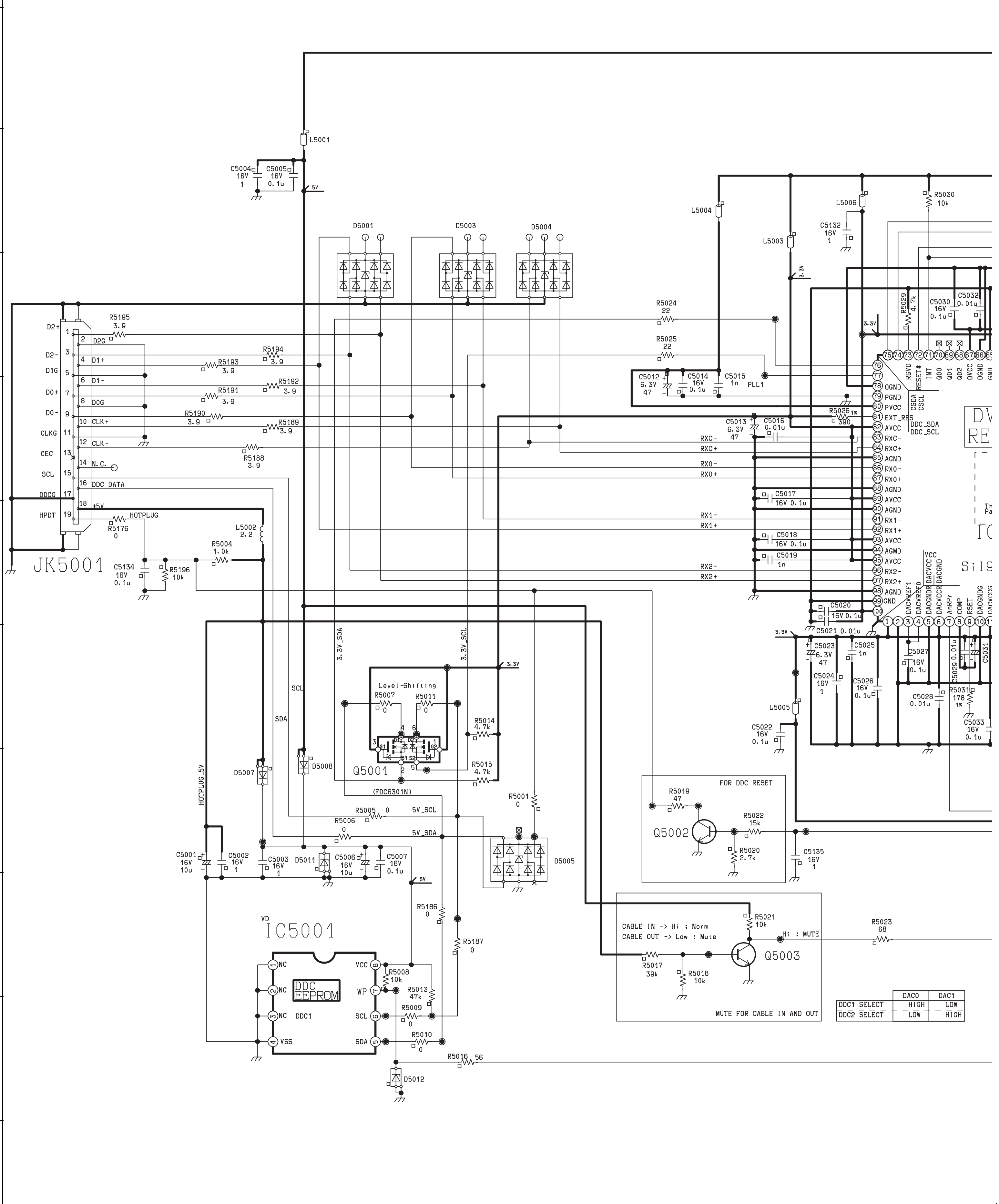
TNP2AA144
DT
ORDER NO.
CR. NO. 8

DT-PCB TOP VIEW TNP2AA144


J
I
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D
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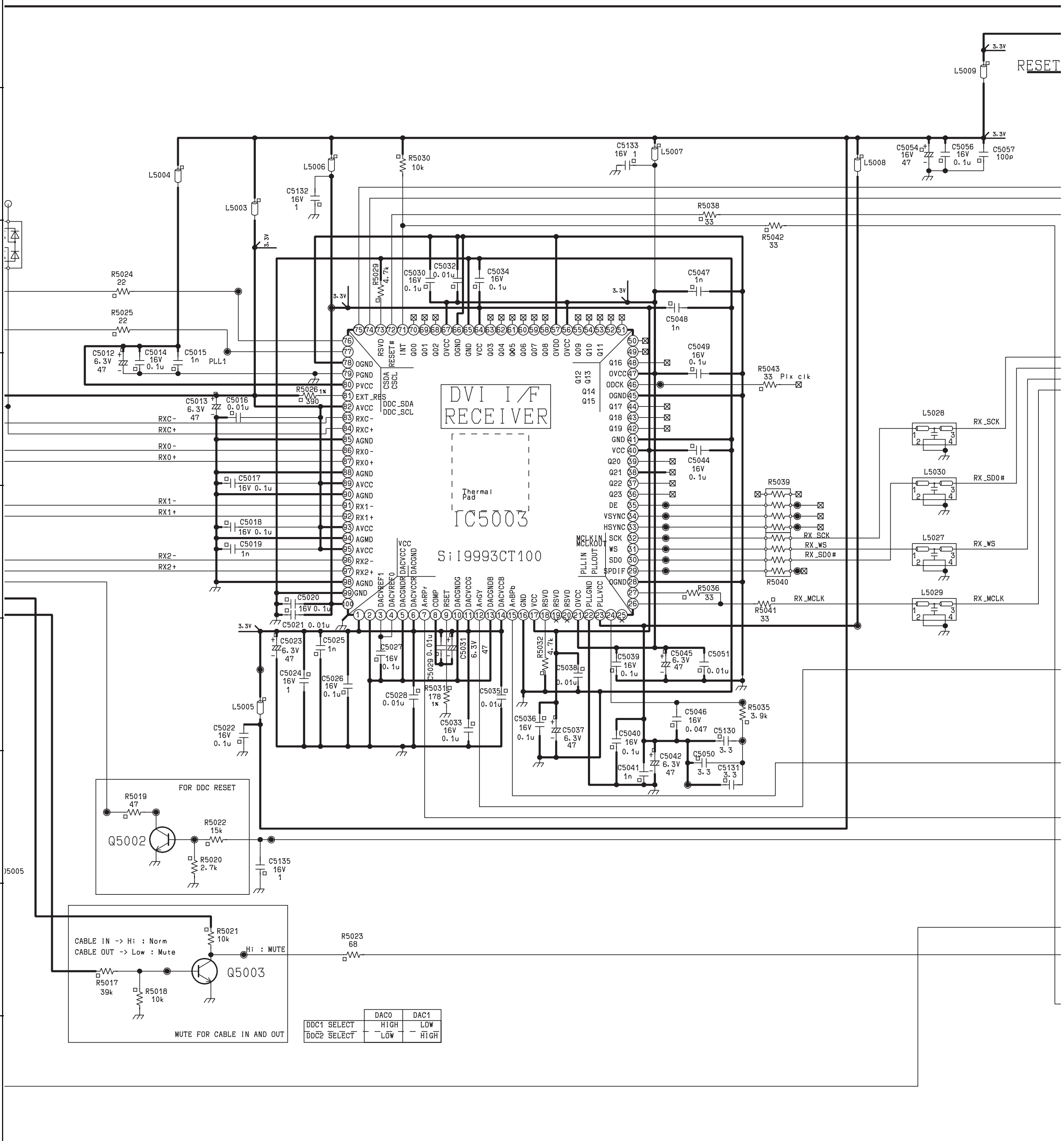
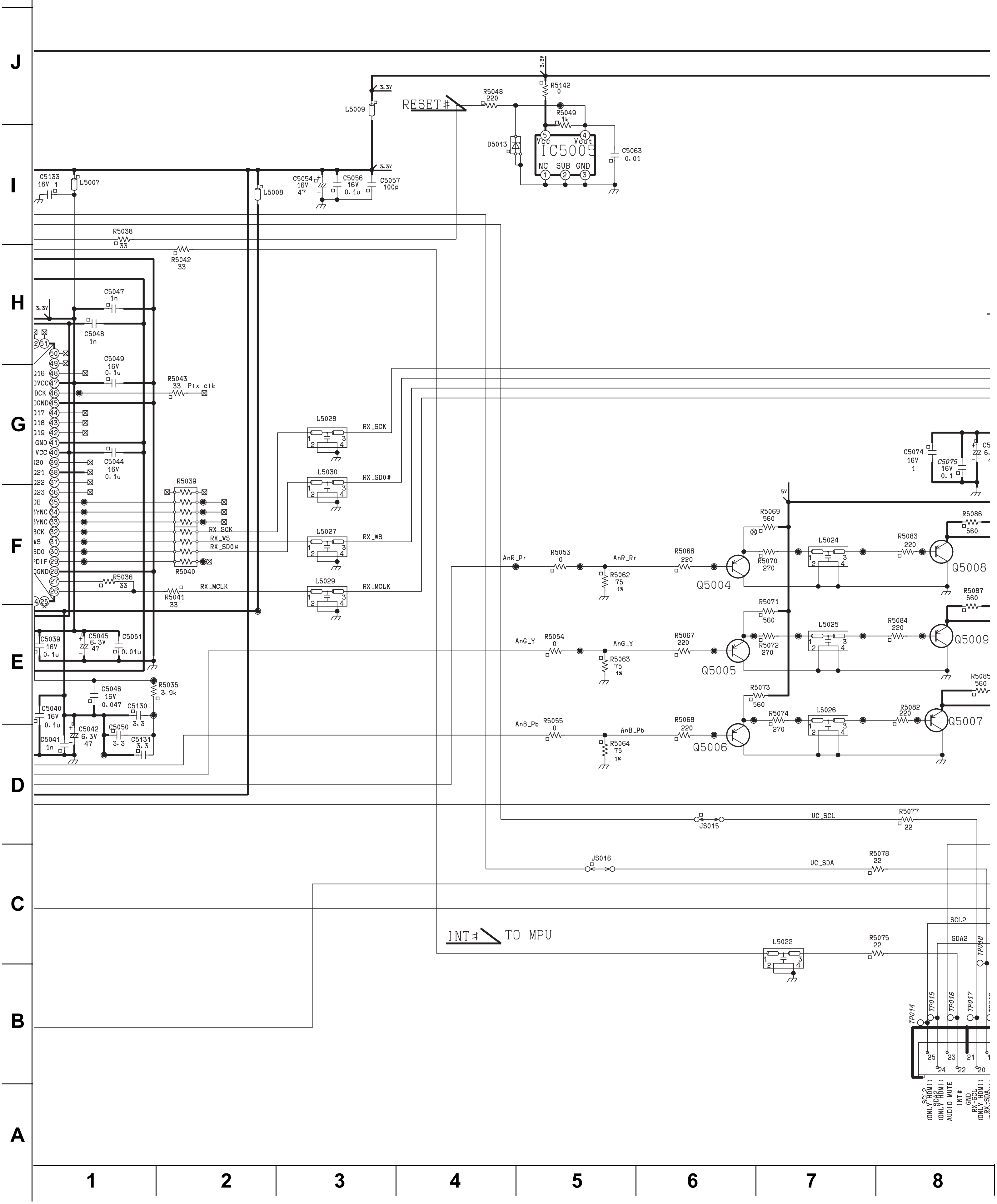
A
L5001
C5004 16V 1
C5005 16V 0.1u
5V
D5001
D5003
D5004
L5004
L5006
R5030 10k
L5003
C5132 16V 1
3.3V
R5029 4.7k
C5030 16V 0.1u
C5032 0.01u
R5024 22
R5025 22
R5195 3.9
D2+
D2-
D1G
D0+
D0-
CLKG
CEC
SCL
DDCG
HPDT
D2G
D1+
D1-
D0G
CLK+
CLK-
N.C.
DDC DATA
+5V
HOTPLUG
R5194 3.9
R5193 3.9
R5192 3.9
R5191 3.9
R5190 3.9
R5189 3.9
R5188 3.9
R5176 0
JK5001
C5134 16V 0.1u
R5196 10k
R5004 1.0k
L5002 2.2
C5012 6.3V 47
C5014 16V 0.1u
C5015 1n
PLL1
C5013 6.3V 47
C5016 0.01u
R5026 1% 390
RXC-
RXC+
RX0-
RX0+
RX1-
RX1+
RX2-
RX2+
C5017 16V 0.1u
C5018 16V 0.1u
C5019 1n
C5020 16V 0.1u
C5021 0.01u
75 74 73 72 71 70 69 68 67 66 65
RSVD RESET# INT Q00 Q01 Q02 OVCC OGND GND
76 77 78 OGND 79 PGND 80 PVCC 81 EXT_RES 82 AVCC 83 RXC- 84 RXC+ 85 AGND 86 RX0- 87 RX0+ 88 AGND 89 AVCC 90 AGND 91 RX1- 92 RX1+ 93 AVCC 94 AGMD 95 AVCC 96 RX2- 97 RX2+ 98 AGND 99 GND 100
CSDA CSCL
DDC_SDA DDC_SCL
DV
RE
Th
Pa
IC
SiI9
VCC
1 2 3 4 5 6 7 8 9 10
DACVREF1 DACVREFO DACGNDR DACVCCR DACVCC DACGND AnRPr COMP RSET DACGNDG DACVCCG
C5023 6.3V 47
C5025 1n
C5027 16V 0.1u
C5029 0.01u
C5031
C5024 16V 1
C5026 16V 0.1u
C5028 0.01u
R5031 178 1%
C5033 16V 0.1u
L5005
C5022 16V 0.1u
3.3V_SDA
3.3V_SCL
3.3V
SCL
SDA
Level-Shifting
R5007 0
R5011 0
R5014 4.7k
R5015 4.7k
Q5001
(FDC6301N)
G1 D1 D2 G2 S1 S2
D5007
D5008
HOTPLUG_5V
R5001 0
R5005 0
5V_SCL
R5006 0
5V_SDA
D5005
C5001 16V 10u
C5002 16V 1
C5003 16V 1
D5011
C5006 16V 10u
C5007 16V 0.1u
FOR DDC RESET
R5019 47
Q5002
R5022 15k
R5020 2.7k
C5135 16V 1
R5021 10k
CABLE IN -> Hi : Norm
CABLE OUT -> Low : Mute
Hi : MUTE
R5017 39k
R5018 10k
Q5003
MUTE FOR CABLE IN AND OUT
R5023 68
R5186 0
R5187 0
VD
IC5001
NC
NC
NC
VSS
VCC
WP
SCL
SDA
DDC EEPROM
DDC1
R5008 10k
R5013 47k
R5009 0
R5010 0
R5016 56
D5012

	DAC0	DAC1
DDC1 SELECT	HIGH	LOW
DDC2 SELECT	LOW	HIGH



J
I
H
G
F
E
D
C
B
A
3.3V
RESET
L5009
L5004
L5003
L5006
C5132 16V 1
R5030 10k
C5133 16V 1
L5007
L5008
C5054 16V 47
C5056 16V 0.1u
C5057 100p
R5038 33
R5042 33
R5024 22
R5025 22
R5029 4.7k
C5030 16V 0.1u
C5032 0.01u
C5034 16V 0.1u
C5047 1n
C5048 1n
C5049 16V 0.1u
R5043 33
Pix clk
C5012 6.3V 47
C5014 16V 0.1u
C5015 1n
PLL1
C5013 6.3V 47
C5016 0.01u
R5026 1% 390
RXC-
RXC+
RX0-
RX0+
RX1-
RX1+
RX2-
RX2+
C5017 16V 0.1u
C5018 16V 0.1u
C5019 1n
C5020 16V 0.1u
C5021 0.01u
DVI I/F RECEIVER
Thermal Pad
IC5003
SiI9993CT100
RSVD
RESET#
INT
Q00
Q01
Q02
OVCC
OGND
GND
VCC
Q03
Q04
Q05
Q06
Q07
Q08
OVDD
OVCC
Q09
Q10
Q11
CSDA
CSCL
DDC_SDA
DDC_SCL
Q12
Q13
Q14
Q15
Q16
OVCC
ODCK
OGND
Q17
Q18
Q19
GND
VCC
Q20
Q21
Q22
Q23
DE
VSYNC
HSYNC
MCLKIN
MCLKOUT
SCK
WS
SD0
SPDIF
OGND
OGND
PGND
PVCC
EXT_RES
AVCC
RXC-
RXC+
AGND
RX0-
RX0+
AGND
AVCC
AGND
RX1-
RX1+
AVCC
AGND
AVCC
RX2-
RX2+
AGND
GND
VCC
DACVCC
DACGND
DACVREF1
DACVREF0
DACGNDR
DACVCCR
AnRPr
COMP
RSET
DACGNDG
DACVCCG
AnGY
DACGNDB
DACVCCB
AnBPb
GND
VCC
RSVD
RSVD
RSVD
OVCC
PLLGND
PLLVCC
PLLIN
PLLOUT
C5044 16V 0.1u
R5039
R5040
R5036 33
R5041 33
RX_SCK
RX_WS
RX_SD0#
RX_MCLK
L5028
L5030
L5027
L5029
C5023 6.3V 47
C5025 1n
C5024 16V 1
C5026 16V 0.1u
C5027 16V 0.1u
C5028 0.01u
C5029 0.01u
C5031 6.3V 47
R5031 178 1%
C5033 16V 0.1u
C5035 0.01u
R5032 4.7k
C5038 0.01u
C5036 16V 0.1u
C5037 6.3V 47
C5039 16V 0.1u
C5045 6.3V 47
C5051 0.01u
C5046 16V 0.047
R5035 3.9k
C5130 3.3
C5040 16V 0.1u
C5041 1n
C5042 6.3V 47
C5050 3.3
C5131 3.3
L5005
C5022 16V 0.1u
FOR DDC RESET
R5019 47
Q5002
R5022 15k
R5020 2.7k
C5135 16V 1
D5005
R5021 10k
CABLE IN -> Hi : Norm
CABLE OUT -> Low : Mute
Hi : MUTE
R5023 68
R5017 39k
R5018 10k
Q5003
MUTE FOR CABLE IN AND OUT

	DAC0	DAC1
DDC1 SELECT	HIGH	LOW
DDC2 SELECT	LOW	HIGH


J
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H
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D
C
B
A
1
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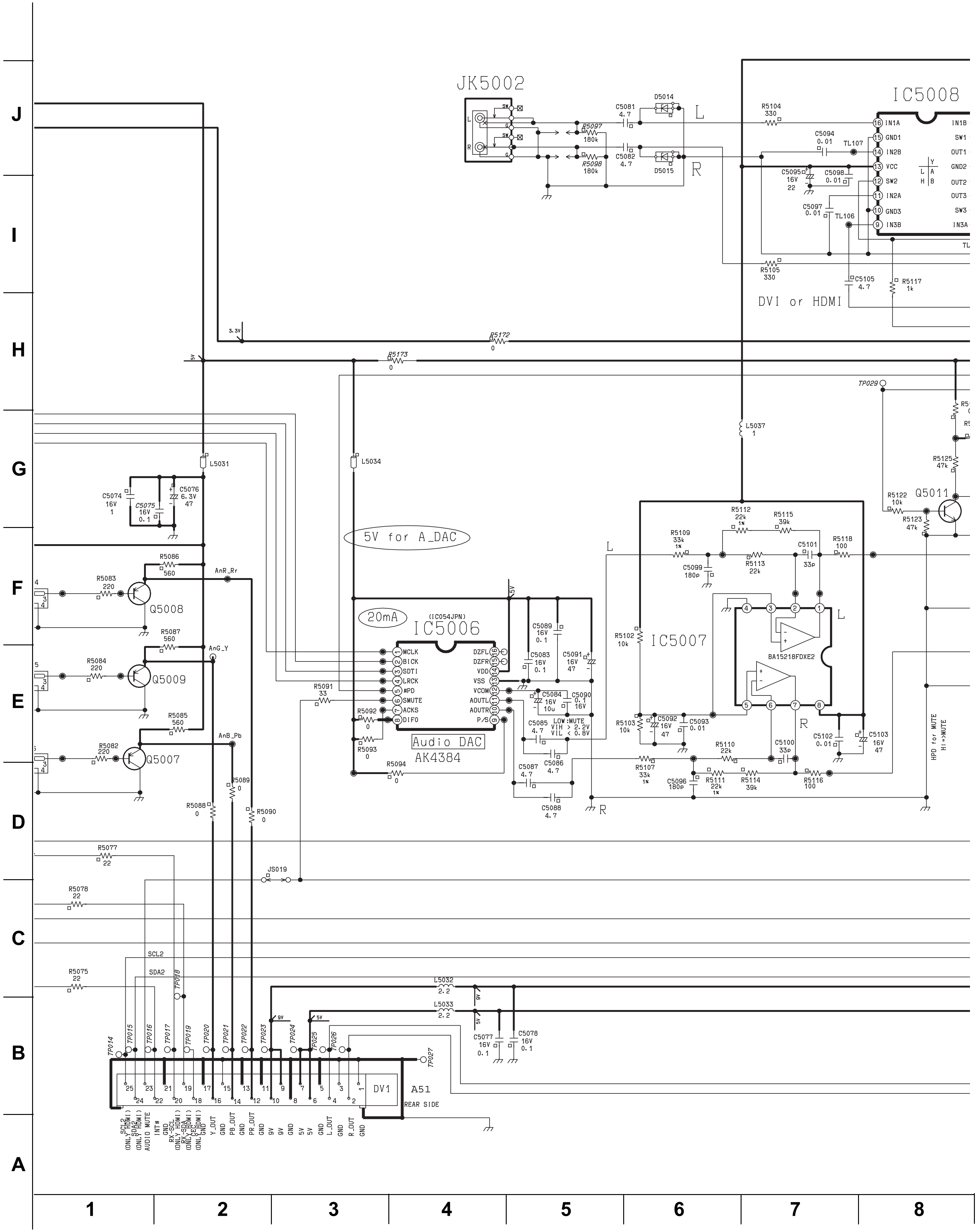
3
4
5
6
7
8
3.3V
R5142
0
RESET#
R5048
220
L5009
R5049
1k
Vcc
Vout
IC5005
NC
SUB
GND
D5013
C5063
0.01
C5133
16V 1
L5007
L5008
C5054
16V
47
C5056
16V
0.1u
C5057
100p
R5038
33
R5042
33
C5047
1n
C5048
1n
C5049
16V
0.1u
R5043
33
Pix clk
C5044
16V
0.1u
R5039
RX_SCK
RX_WS
RX_SD0#
R5040
R5036
33
R5041
33
RX_MCLK
L5028
L5030
L5027
L5029
RX_SD0#
C5039
16V
0.1u
C5045
6.3V
47
C5051
0.01u
C5046
16V
0.047
R5035
3.9k
C5040
16V
0.1u
C5042
6.3V
47
C5041
1n
C5050
3.3
C5130
3.3
C5131
3.3
C5074
16V
1
C5075
16V
0.1
5V
R5069
560
R5086
560
L5024
R5083
220
Q5008
AnR_Pr
R5053
0
AnR_Rr
R5066
220
R5070
270
R5062
75
1%
Q5004
R5087
560
R5071
560
L5025
R5084
220
Q5009
AnG_Y
R5054
0
R5067
220
R5072
270
R5063
75
1%
Q5005
R5085
560
R5073
560
R5074
270
L5026
R5082
220
Q5007
AnB_Pb
R5055
0
R5068
220
R5064
75
1%
Q5006
JS015
UC_SCL
R5077
22
JS016
UC_SDA
R5078
22
INT#
TO MPU
L5022
R5075
22
SCL2
SDA2
TP018
TP014
TP015
TP016
TP017
25
24
23
22
21
20
SCL2 (ONLY HDMI)
SDA2 (ONLY HDMI)
AUDIO MUTE
INT#
GND
RX-SCL (ONLY HDMI)
RX-SDA


J
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D
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1
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3
4
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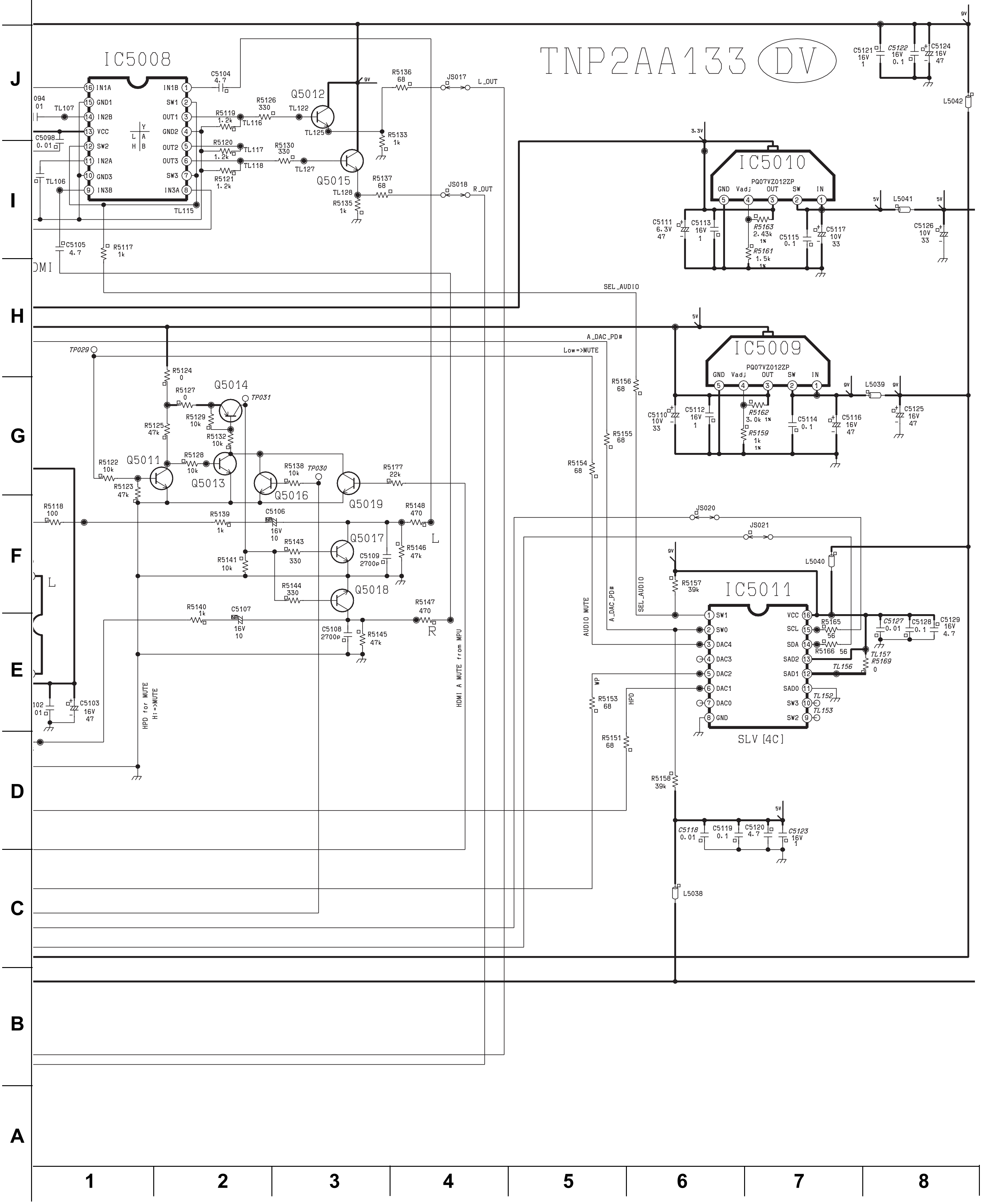
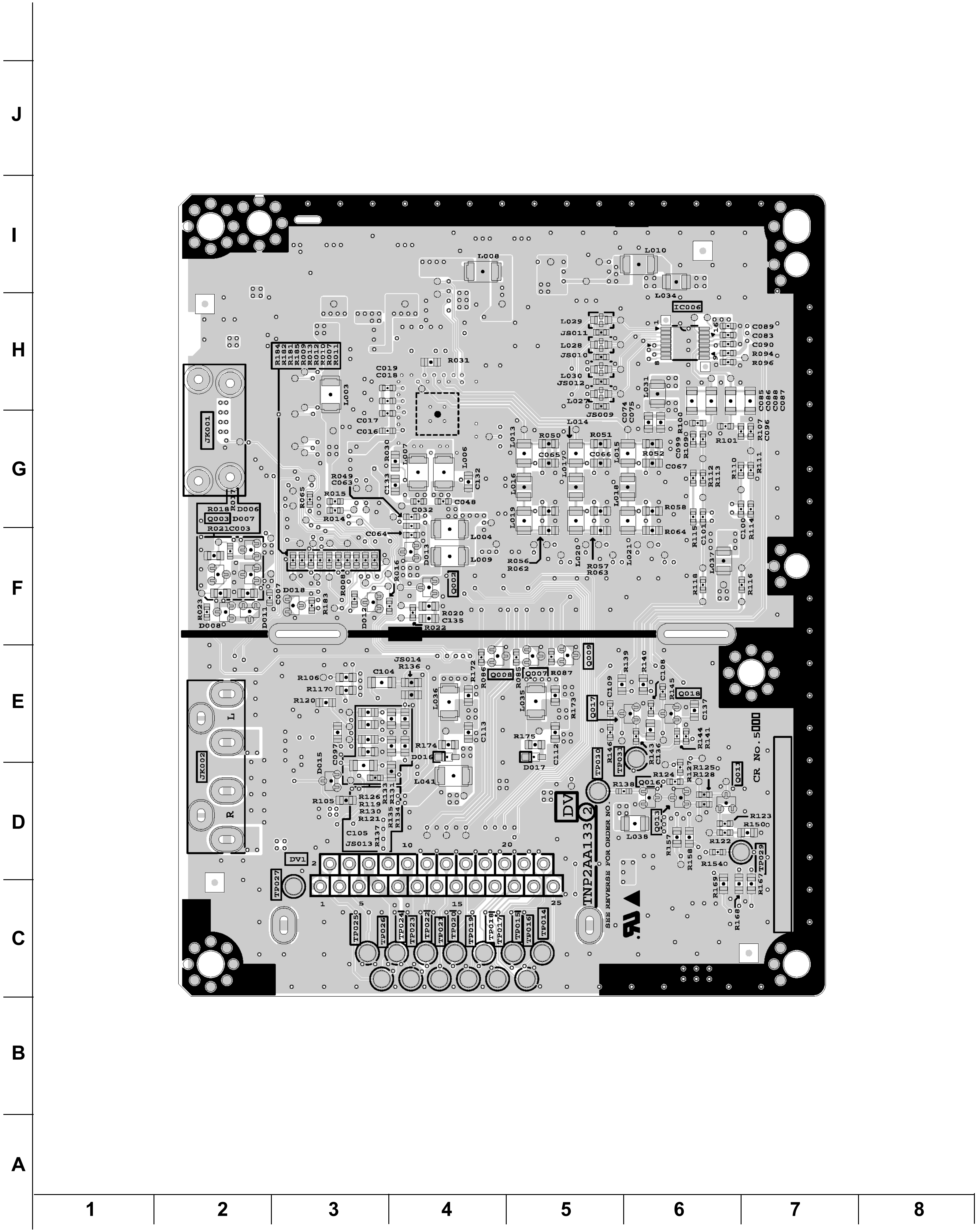
7
8
JK5002
SW
G
L
R
C5081 4.7
D5014
L
R5097 180k
R5098 180k
C5082 4.7
D5015
R
R5104 330
IC5008
IN1A
GND1
IN2B
VCC
SW2
IN2A
GND3
IN3B
IN1B
SW1
OUT1
GND2
OUT2
OUT3
SW3
IN3A
Y
L A
H B
C5094 0.01
TL107
C5095 16V 22
C5098 0.01
C5097 0.01
TL106
R5105 330
C5105 4.7
R5117 1k
DVI or HDMI
3.3V
R5172 0
5V
R5173 0
TP029
L5037 1
L5031
L5034
C5074 16V 1
C5075 16V 0.1
C5076 6.3V 47
5V for A_DAC
R5125 47k
R5122 10k
Q5011
R5123 47k
R5112 22k 1%
R5115 39k
R5109 33k 1%
C5101 33p
R5118 100
C5099 180p
R5113 22k
R5086 560
AnR_Rr
R5083 220
Q5008
R5087 560
AnG_Y
R5084 220
Q5009
R5085 560
AnB_Pb
R5082 220
Q5007
20mA
(IC054JPN)
IC5006
MCLK
BICK
SDTI
LRCK
#PD
SMUTE
ACKS
DIF0
DZFL
DZFR
VDD
VSS
VCOM
AOUTL
AOUTR
P/S
Audio DAC
AK4384
C5089 16V 0.1
C5083 16V 0.1
C5091 16V 47
C5084 16V 10u
C5090 0.1 16V
LOW:MUTE
VIH > 2.2V
VIL < 0.8V
C5085 4.7
C5086 4.7
C5087 4.7
C5088 4.7
R5091 33
R5092 0
R5093 0
R5094 0
R5102 10k
IC5007
BA15218FDXE2
R5103 10k
C5092 16V 47
C5093 0.01
R5110 22k
C5100 33p
C5102 0.01
C5103 16V 47
R5107 33k 1%
C5096 180p
R5111 22k 1%
R5114 39k
R5116 100
HPD for MUTE
Hi=>MUTE
R5088 0
R5089 0
R5090 0
R5077 22
JS019
R5078 22
SCL2
SDA2
R5075 22
TP018
L5032 2.2
L5033 2.2
9V
5V
C5077 16V 0.1
C5078 16V 0.1
TP014
TP015
TP016
TP017
TP019
TP020
TP021
TP022
TP023
TP024
TP025
TP026
TP027
DV1
A51
REAR SIDE
SCL2 (ONLY HDMI)
SDA (ONLY HDMI)
AUDIO MUTE
INT#
GND
RX-SCL (ONLY HDMI)
RX-SDA (ONLY HDMI)
CEC (ONLY HDMI)
GND
Y_OUT
GND
PB_OUT
GND
PR_OUT
GND
9V
9V
GND
5V
5V
GND
L_OUT
GND
R_OUT
GND


TNP2AA133 (DV)
IC5008
IN1A 16
GND1 15
IN2B 14
VCC 13
SW2 12
IN2A 11
GND3 10
IN3B 9
IN1B 1
SW1 2
OUT1 3
GND2 4
OUT2 5
OUT3 6
SW3 7
IN3A 8
Y L A H B
C5104 4.7
Q5012
Q5015
R5126 330
R5119 1.2k
R5120 1.2k
R5121 1.2k
R5130 330
TL107 TL106 TL115 TL116 TL117 TL118 TL122 TL125 TL127 TL128
C5098 0.01
C5105 4.7
R5117 1k
R5136 68
R5133 1k
R5137 68
R5135 1k
JS017 L_OUT
JS018 R_OUT
9V
C5121 16V 1
C5122 16V 0.1
C5124 16V 47
L5042
3.3V
IC5010
PQ07VZ012ZP
GND Vadj OUT SW IN
5 4 3 2 1
C5111 6.3V 47
C5113 16V 1
R5163 2.43k 1%
R5161 1.5k 1%
C5115 0.1
C5117 10V 33
5V L5041 5V
C5126 10V 33
SEL_AUDIO
A_DAC_PD#
Low=>MUTE
5V
IC5009
PQ07VZ012ZP
GND Vadj OUT SW IN
C5110 10V 33
C5112 16V 1
R5162 3.0k 1%
R5159 1k 1%
C5114 0.1
C5116 16V 47
9V L5039 9V
C5125 16V 47
TP029
R5124 0
R5127 0
Q5014
TP031
R5129 10k
R5125 47k
R5132 10k
R5122 10k
Q5011
R5128 10k
Q5013
R5123 47k
Q5016
R5138 10k
TP030
Q5019
R5177 22k
R5156 68
R5155 68
R5154 68
R5118 100
R5139 1k
C5106 16V 10
R5148 470
L
R5146 47k
Q5017
R5143 330
C5109 2700p
R5141 10k
R5144 330
Q5018
R5140 1k
C5107 16V 10
C5108 2700p
R5145 47k
R5147 470
R
C5103 16V 47
HPD for MUTE Hi=>MUTE
HDMI A MUTE from MPU
JS020
JS021
9V
L5040
R5157 39k
AUDIO MUTE
A_DAC_PD#
SEL_AUDIO
IC5011
SW1 1
SW0 2
DAC4 3
DAC3 4
DAC2 5
DAC1 6
DAC0 7
GND 8
VCC 16
SCL 15
SDA 14
SAD2 13
SAD1 12
SAD0 11
SW3 10
SW2 9
SLV [4C]
R5165 56
R5166 56
C5127 0.01
C5128 0.1
C5129 16V 4.7
TL157
R5169 0
TL156
TL152
TL153
WP
R5153 68
HPD
R5151 68
R5158 39k
5V
C5118 0.01
C5119 0.1
C5120 4.7
C5123 16V 1
L5038
J I H G F E D C B A
1 2 3 4 5 6 7 8


J
I
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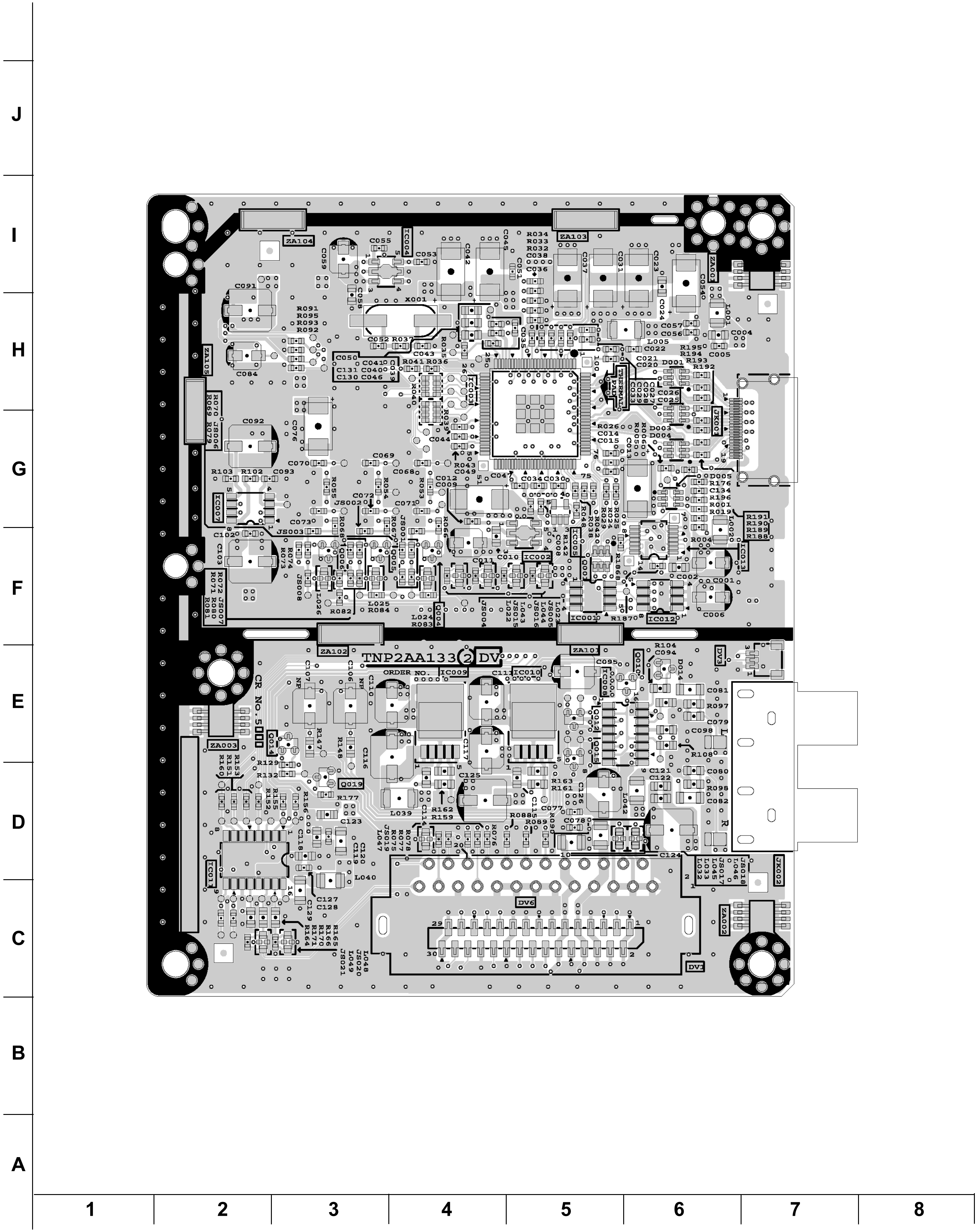
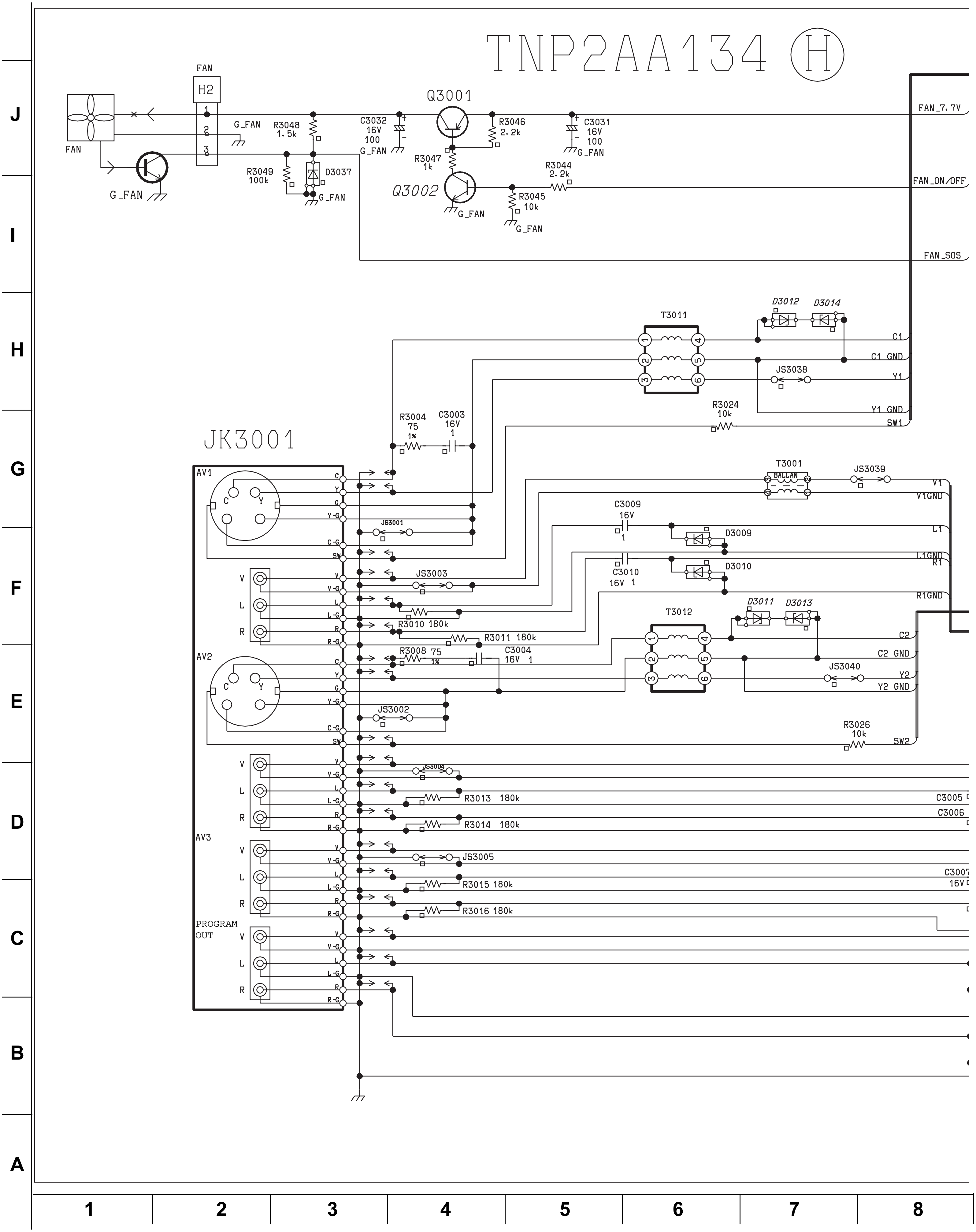
B
A
1
2
3
4
5
6
7
8
L008
L010
L034
IC006
C089
C083
C090
R094
R096
L029
JS011
L028
JS010
L030
JS012
L027
JS009
L031
C085
C086
C088
C087
C074
C075
R100
R109
C099
R101
R107
C096
R184
R182
R181
R180
R009
R013
R012
R010
R007
R011
R031
C019
C018
L003
C017
C016
JK001
L014
R050
R051
L013
C065
C066
L015
R052
C067
L017
R110
R111
R112
R113
R030
L007
L006
C133
C132
R049
C063
R015
R014
R065
C048
C032
C064
L016
L018
L019
R058
R064
L004
L009
D013
R056
R062
L020
R057
R063
L021
R115
C101
C100
R114
L037
R118
R116
R018
D006
Q003
D007
R017
R021
C003
R016
Q002
D018
C007
R008
R183
R023
D008
D011
D012
R020
C135
R022
JS014
R136
C104
R106
R117
R120
R172
R086
Q008
R085
Q007
R087
Q009
R139
R140
C108
C109
R145
Q018
L036
L035
R173
Q017
C137
C113
R175
R174
D016
D017
C112
R146
R143
C136
R144
R141
TP030
TP031
R124
R127
R125
R128
Q011
JK002
L
R
D015
C097
L041
R105
R126
R119
R130
R121
R133
R131
R135
R134
R137
C105
JS013
R138
Q016
DV
TNP2AA133
SEE REVERSE FOR ORDER NO.
Q013
L038
R157
R158
R123
R150
R122
R154
TP029
R169
R168
R167
CR No.5
DV1
TP027
2
10
20
1
5
15
25
TP025
TP026
TP024
TP023
TP022
TP021
TP020
TP019
TP018
TP017
TP015
TP016
TP014

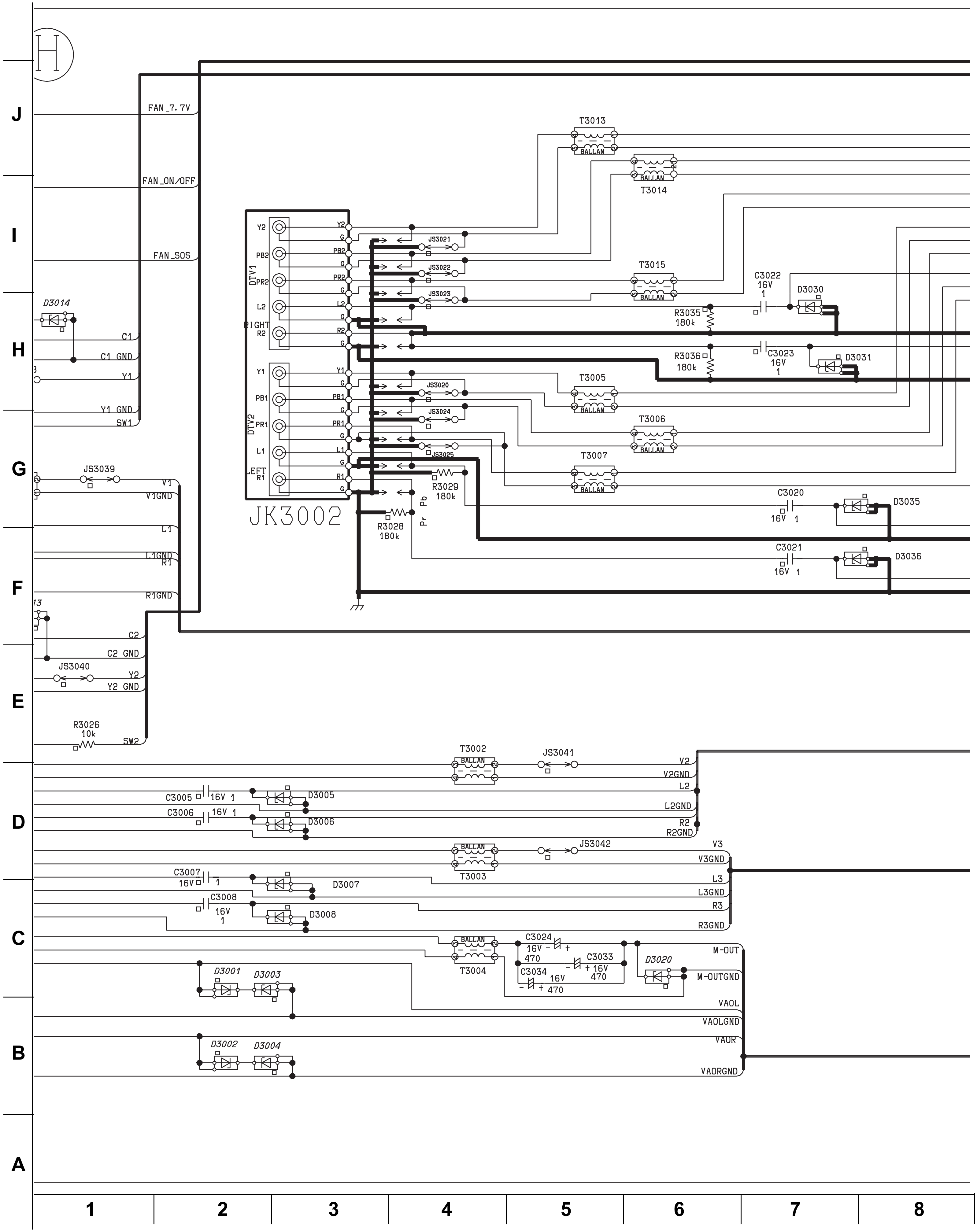
DV-PCB BOTTOM VIEW TNP2AA133 PT-47WXD63G / PT-53WXD63G



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA133 2 DV
ORDER NO.
CR No.5
ZA104
ZA103
ZA105
ZA102
ZA101
ZA003
ZA002
ZA001
IC001
IC002
IC003
IC004
IC005
IC007
IC008
IC009
IC010
IC011
IC012
IC013
JK001
JK002
DV1
DV3
DV6
X001
L
R

DV-PCB TOP VIEW TNP2AA133 PT-47WXD63G / PT-53WXD63G


TNP2AA134 H
FAN
H2
FAN
1
2
3
G_FAN
R3048
1.5k
C3032
16V
100
G_FAN
Q3001
R3046
2.2k
C3031
16V
100
G_FAN
FAN_7.7V
R3049
100k
D3037
G_FAN
R3047
1k
Q3002
G_FAN
R3044
2.2k
R3045
10k
G_FAN
FAN_ON/OFF
FAN_SOS
T3011
D3012
D3014
C1
C1 GND
JS3038
Y1
Y1 GND
R3024
10k
SW1
JK3001
R3004
75
1%
C3003
16V
1
AV1
C
Y
G
Y-G
C-G
SW
JS3001
T3001
BALLAN
JS3039
V1
V1GND
C3009
16V
1
D3009
L1
L1GND
R1
C3010
16V 1
D3010
R1GND
V
V-G
L
L-G
R
R-G
JS3003
R3010 180k
R3011 180k
T3012
D3011
D3013
C2
C2 GND
R3008 75
1%
C3004
16V 1
AV2
JS3002
JS3040
Y2
Y2 GND
R3026
10k
SW2
JS3004
R3013 180k
C3005
R3014 180k
C3006
AV3
JS3005
R3015 180k
C3007
16V
R3016 180k
PROGRAM OUT
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8



H
FAN_7.7V
FAN_ON/OFF
FAN_SOS
D3014
C1
C1 GND
Y1
Y1 GND
SW1
JS3039
V1
V1GND
L1
L1GND
R1
R1GND
C2
C2 GND
JS3040
Y2
Y2 GND
R3026
10k
SW2
JK3002
DTV1
DTV2
RIGHT
LEFT
Y2
G
PB2
PR2
L2
R2
Y1
PB1
PR1
L1
R1
JS3021
JS3022
JS3023
JS3020
JS3024
JS3025
R3028
180k
R3029
180k
Pr
Pb
T3013
BALLAN
T3014
T3015
T3005
T3006
T3007
R3035
180k
R3036
180k
C3022
16V
1
C3023
16V
1
D3030
D3031
C3020
16V 1
D3035
C3021
16V 1
D3036
T3002
JS3041
V2
V2GND
L2
L2GND
R2
R2GND
C3005
16V 1
D3005
C3006
16V 1
D3006
T3003
JS3042
V3
V3GND
C3007
16V
1
D3007
L3
L3GND
C3008
16V
1
D3008
R3
R3GND
T3004
C3024
16V
470
C3033
16V
470
C3034
16V
470
D3020
M-OUT
M-OUTGND
D3001
D3003
VAOL
VAOLGND
D3002
D3004
VAOR
VAORGND
J
I
H
G
F
E
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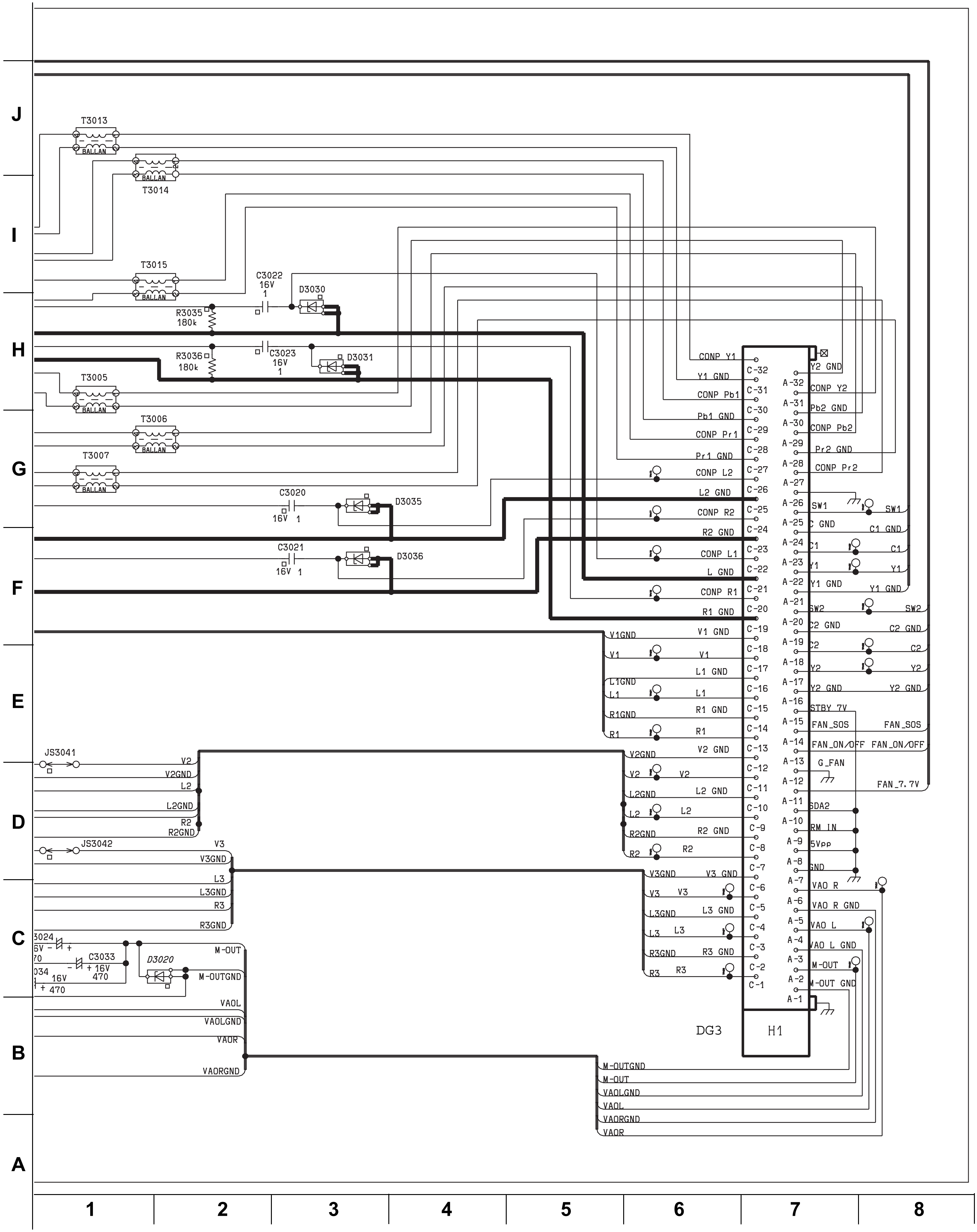
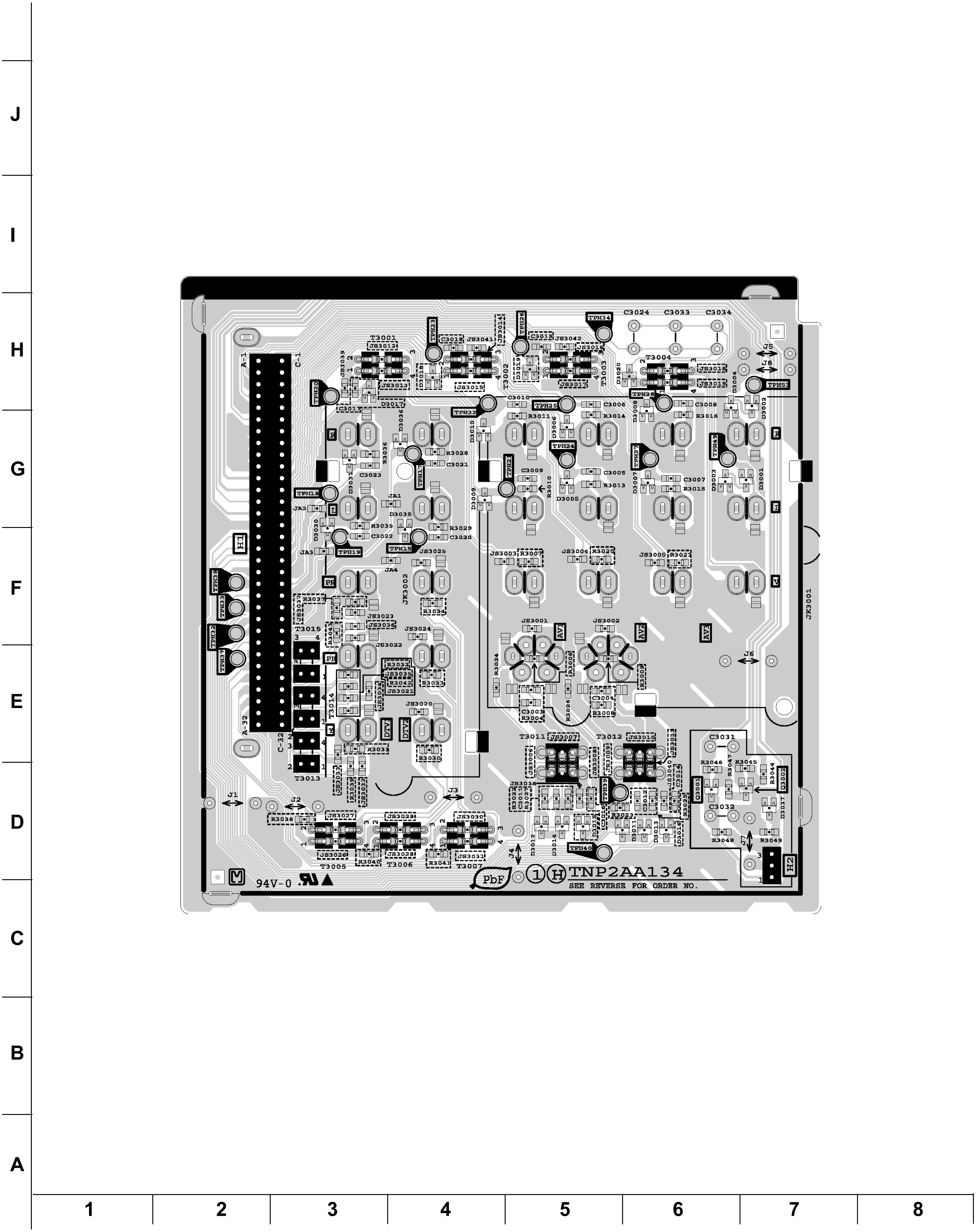
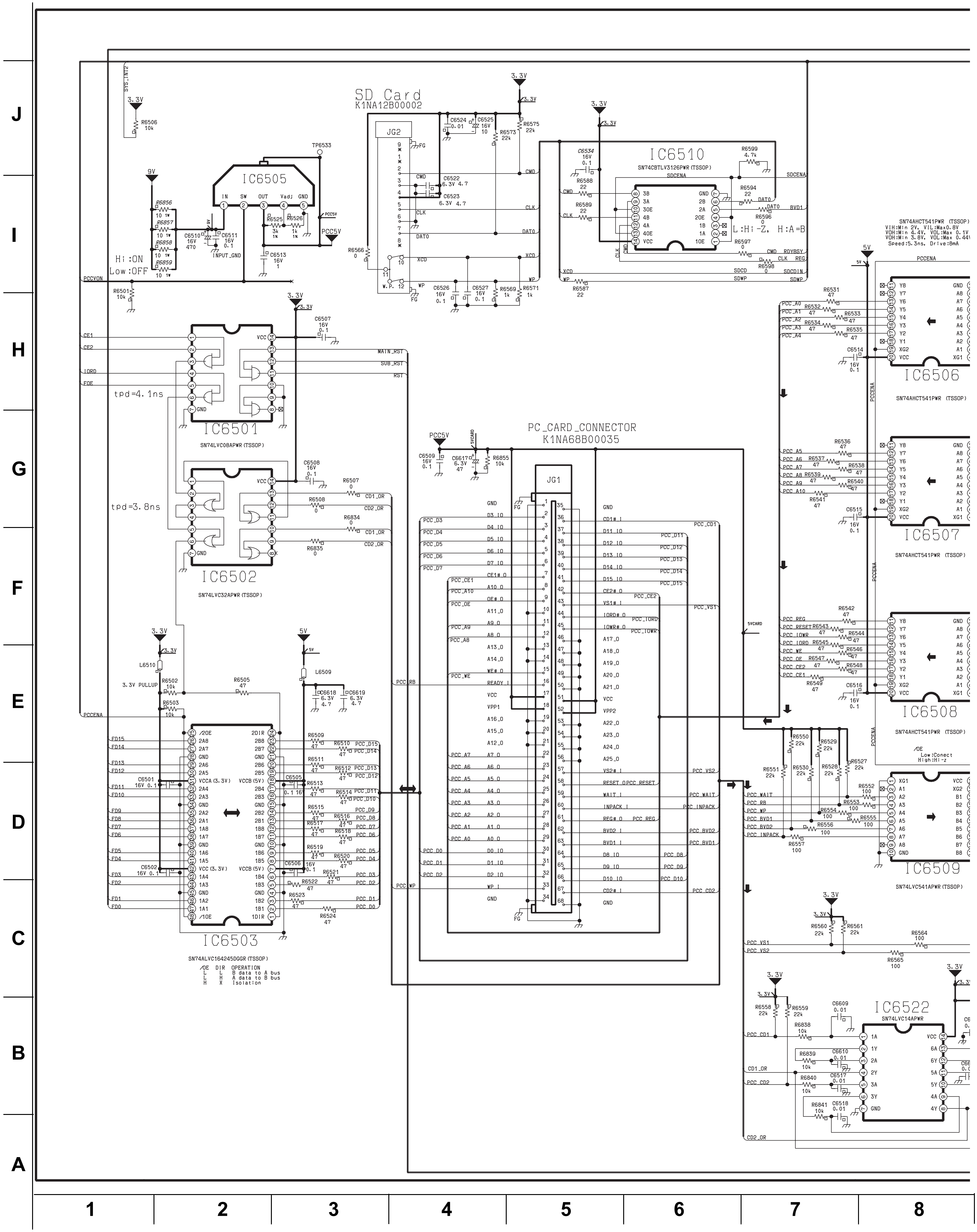
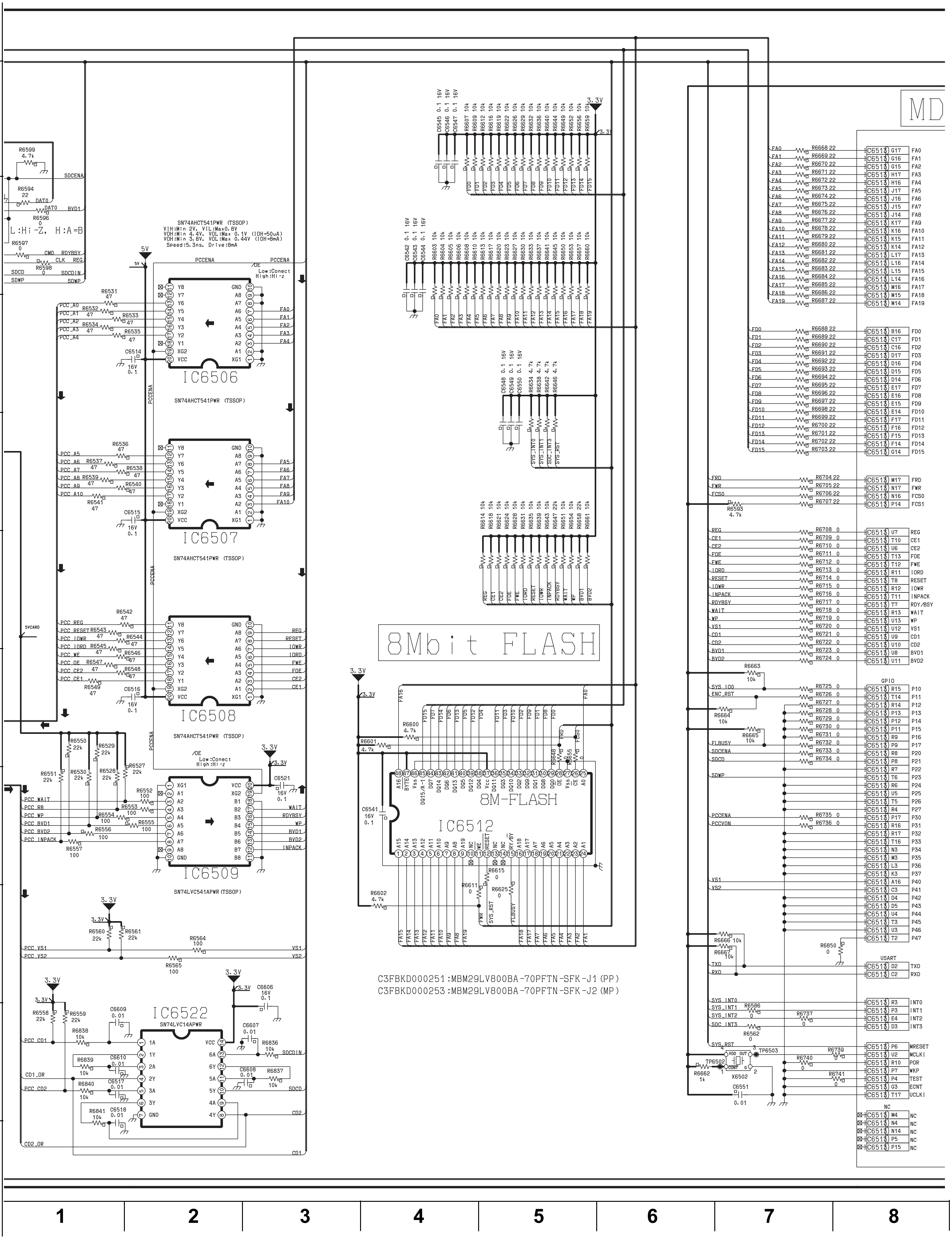
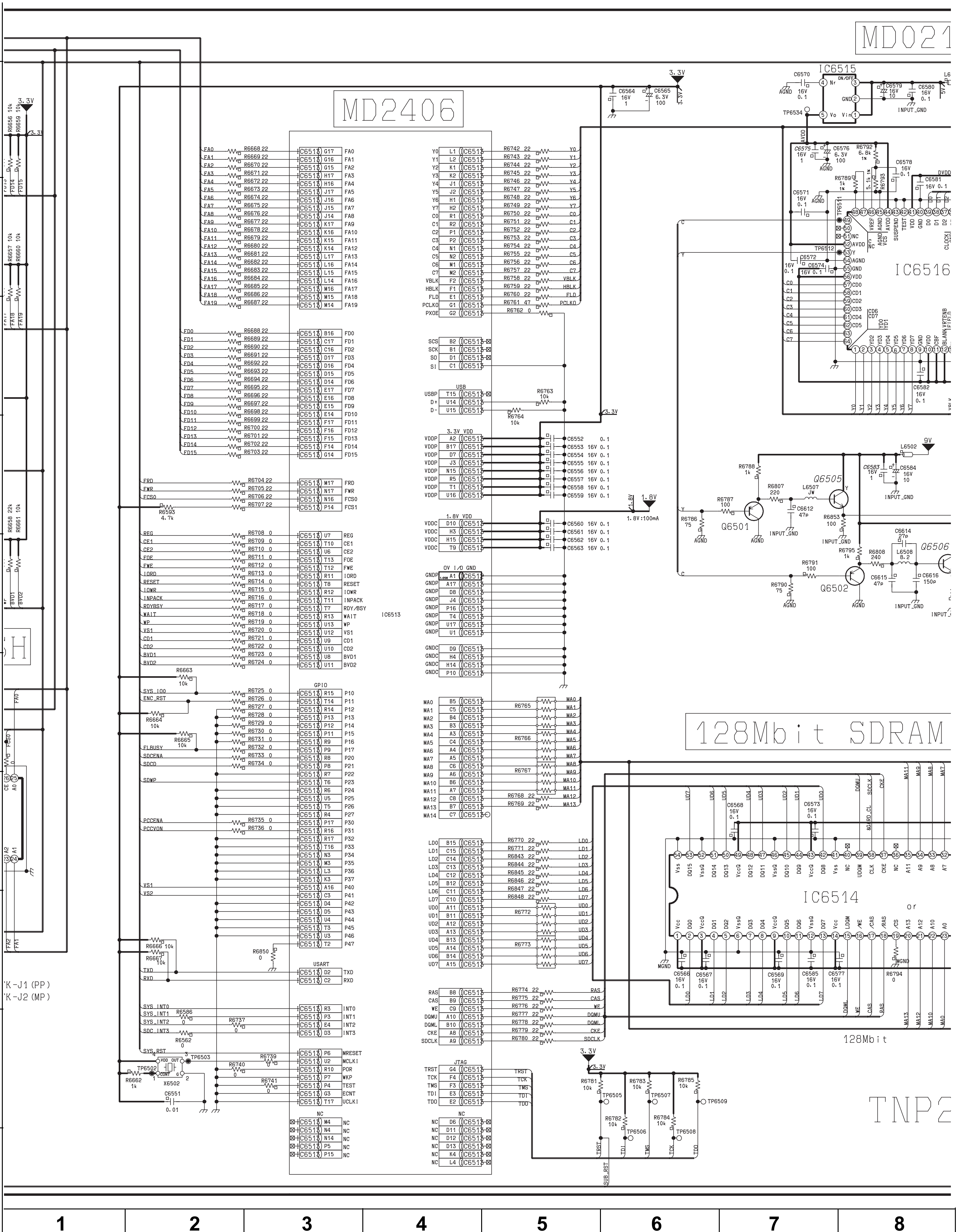
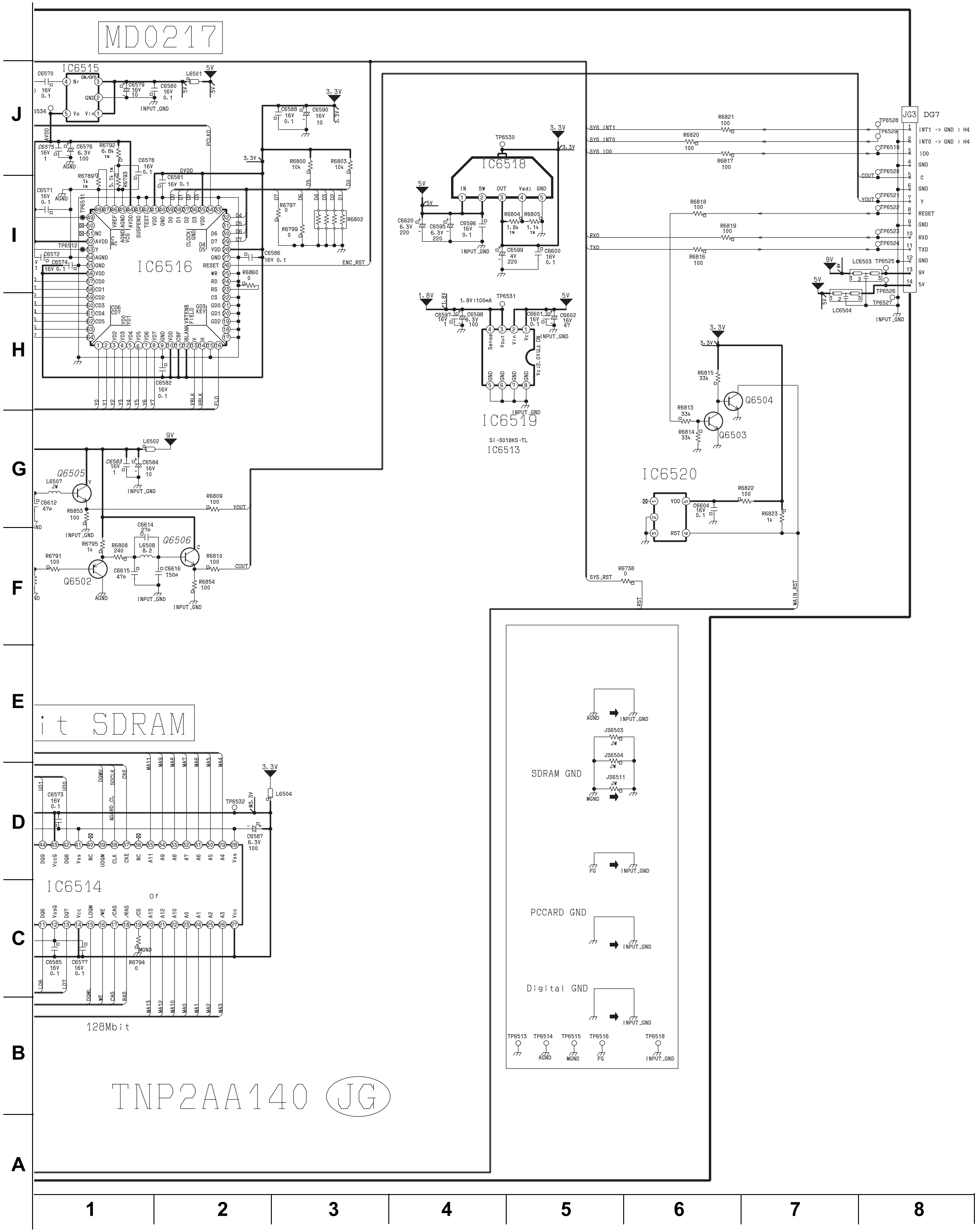

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
T3013
BALLAN
T3014
BALLAN
T3015
BALLAN
C3022
16V
1
D3030
R3035
180k
C3023
16V
1
D3031
R3036
180k
T3005
BALLAN
T3006
BALLAN
T3007
BALLAN
C3020
16V 1
D3035
C3021
16V 1
D3036
CONP Y1
Y1 GND
CONP Pb1
Pb1 GND
CONP Pr1
Pr1 GND
CONP L2
L2 GND
CONP R2
R2 GND
CONP L1
L GND
CONP R1
R1 GND
V1GND
V1 GND
V1
V1
L1 GND
L1GND
L1
L1
R1 GND
R1GND
R1
R1
V2GND
V2 GND
V2
V2
L2GND
L2 GND
L2
L2
R2GND
R2 GND
R2
R2
V3GND
V3 GND
V3
V3
L3GND
L3 GND
L3
L3
R3GND
R3 GND
R3
R3
C-32
C-31
C-30
C-29
C-28
C-27
C-26
C-25
C-24
C-23
C-22
C-21
C-20
C-19
C-18
C-17
C-16
C-15
C-14
C-13
C-12
C-11
C-10
C-9
C-8
C-7
C-6
C-5
C-4
C-3
C-2
C-1
A-32
A-31
A-30
A-29
A-28
A-27
A-26
A-25
A-24
A-23
A-22
A-21
A-20
A-19
A-18
A-17
A-16
A-15
A-14
A-13
A-12
A-11
A-10
A-9
A-8
A-7
A-6
A-5
A-4
A-3
A-2
A-1
Y2 GND
CONP Y2
Pb2 GND
CONP Pb2
Pr2 GND
CONP Pr2
SW1
SW1
C GND
C1 GND
C1
C1
Y1
Y1
Y1 GND
Y1 GND
SW2
SW2
C2 GND
C2 GND
C2
C2
Y2
Y2
Y2 GND
Y2 GND
STBY 7V
FAN_SOS
FAN_SOS
FAN_ON/OFF
FAN_ON/OFF
G_FAN
FAN_7.7V
SDA2
RM IN
5Vpp
GND
VAO R
VAO R GND
VAO L
VAO L GND
M-OUT
M-OUT GND
DG3
H1
JS3041
V2
V2GND
L2
L2GND
R2
R2GND
JS3042
V3
V3GND
L3
L3GND
R3
R3GND
3024
6V
70
034
16V
+ 470
C3033
16V
470
D3020
M-OUT
M-OUTGND
VAOL
VAOLGND
VAOR
VAORGND
M-OUTGND
M-OUT
VAOLGND
VAOL
VAORGND
VAOR

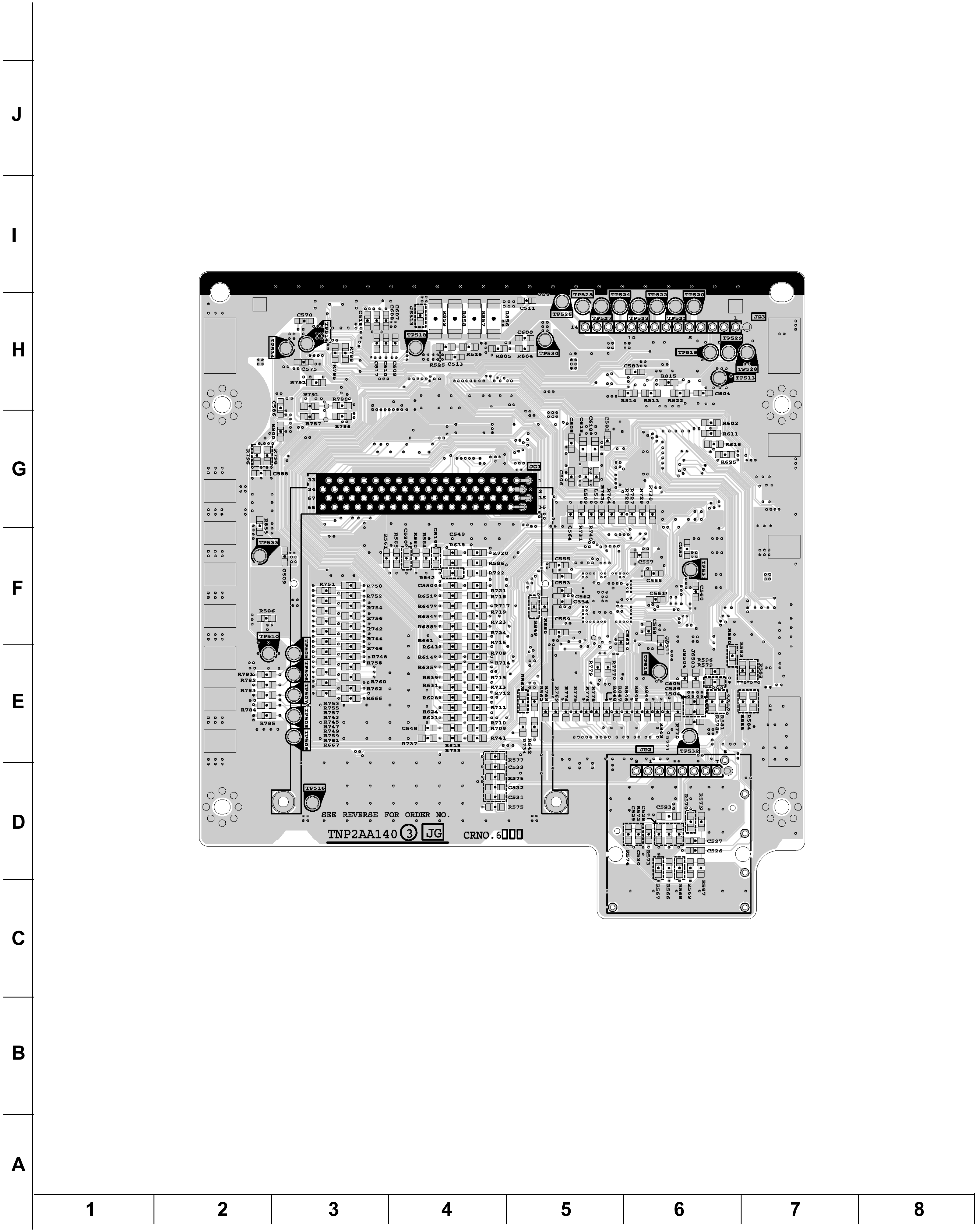

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
C3024
C3033
C3034
TPH34
T3001
JS3012
TPH23
C3018
JS3041
JS3014
TPH26
C3019
JS3042
JS3016
T3002
T3003
T3004
JS3018
JS3019
J5
J8
TPH50
A-1
C-1
JS3039
JS3013
JS3015
JS3017
D3018
D3019
D3020
D3004
D3002
TPH20
C3017
D3017
TPH22
C3010
TPH25
C3006
TPH28
C3008
R3011
R3014
D3008
R3016
D3036
D3010
D3006
TPH24
TPH27
TPH49
R3036
R3028
C3021
C3023
TPH17
TPH21
C3009
R3010
C3005
C3007
D3003
D3001
R3013
R3015
D3007
D3005
D3009
TPH18
D3031
JA1
JA2
D3035
R3035
R3029
D3030
C3022
C3020
TPH19
TPH15
JA3
JS3025
JA4
H1
JS3003
R3007
JS3004
R3020
JS3005
R3021
TPH38
TPH33
TPH32
TPH37
JK3002
R3037
JS3037
R3034
JK3001
T3015
JS3023
JS3036
JS3024
JS3001
JS3002
AV1
AV2
AV3
JS3022
R3032
JS3035
R3042
JS3021
R3033
R3024
R3006
R3009
J6
T3014
JS3034
JS3020
C3003
R3004
R3026
C3004
R3008
DTV1
DTV2
A-32
C-32
R3031
R3030
T3011
JS3007
T3012
JS3010
JS3011
C3031
JS3006
JS3008
JS3009
R3046
R3047
R3045
R3044
Q3002
Q3001
T3013
JS3033
R3039
JS3032
JS3038
R3022
C3011
R3027
TPH39
C3012
JS3010
C3014
R3025
R3023
C3032
D3037
J1
J2
J3
R3038
JS3027
JS3029
JS3030
D3012
D3014
D3011
D3013
D3016
R3048
R3049
J7
JS3026
JS3028
JS3031
R3040
R3041
J4
TPH40
T3005
T3006
T3007
H2
94V-0
PbF
①
Ⓗ
TNP2AA134
SEE REVERSE FOR ORDER NO.


SD Card
K1NA12B00002
JG2
IC6505
IC6510
SN74CBTLV3126PWR (TSSOP)
L:Hi-Z, H:A=B
Hi:ON
Low:OFF
IC6501
SN74LVC08APWR (TSSOP)
tpd=4.1ns
IC6502
SN74LVC32APWR (TSSOP)
tpd=3.8ns
IC6503
SN74ALVC164245DGGR (TSSOP)
/OE DIR OPERATION
L L B data to A bus
L H A data to B bus
H X Isolation
3.3V PULLUP
PC_CARD_CONNECTOR
K1NA68B00035
JG1
IC6506
SN74AHCT541PWR (TSSOP)
VIH:Min 2V, VIL:Max0.8V
VOH:Min 4.4V, VOL:Max 0.1V
VOH:Min 3.8V, VOL:Max 0.44V
Speed:5.3ns, Drive:8mA
IC6507
SN74AHCT541PWR (TSSOP)
IC6508
SN74AHCT541PWR (TSSOP)
/OE
Low:Conect
High:Hi-z
IC6509
SN74LVC541APWR (TSSOP)
IC6522
SN74LVC14APWR
3.3V
5V
9V
PCC5V
PCCVON
PCCENA
SYS_INT2
TP6533
MAIN_RST
SUB_RST
RST
CD1_OR
CD2_OR
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

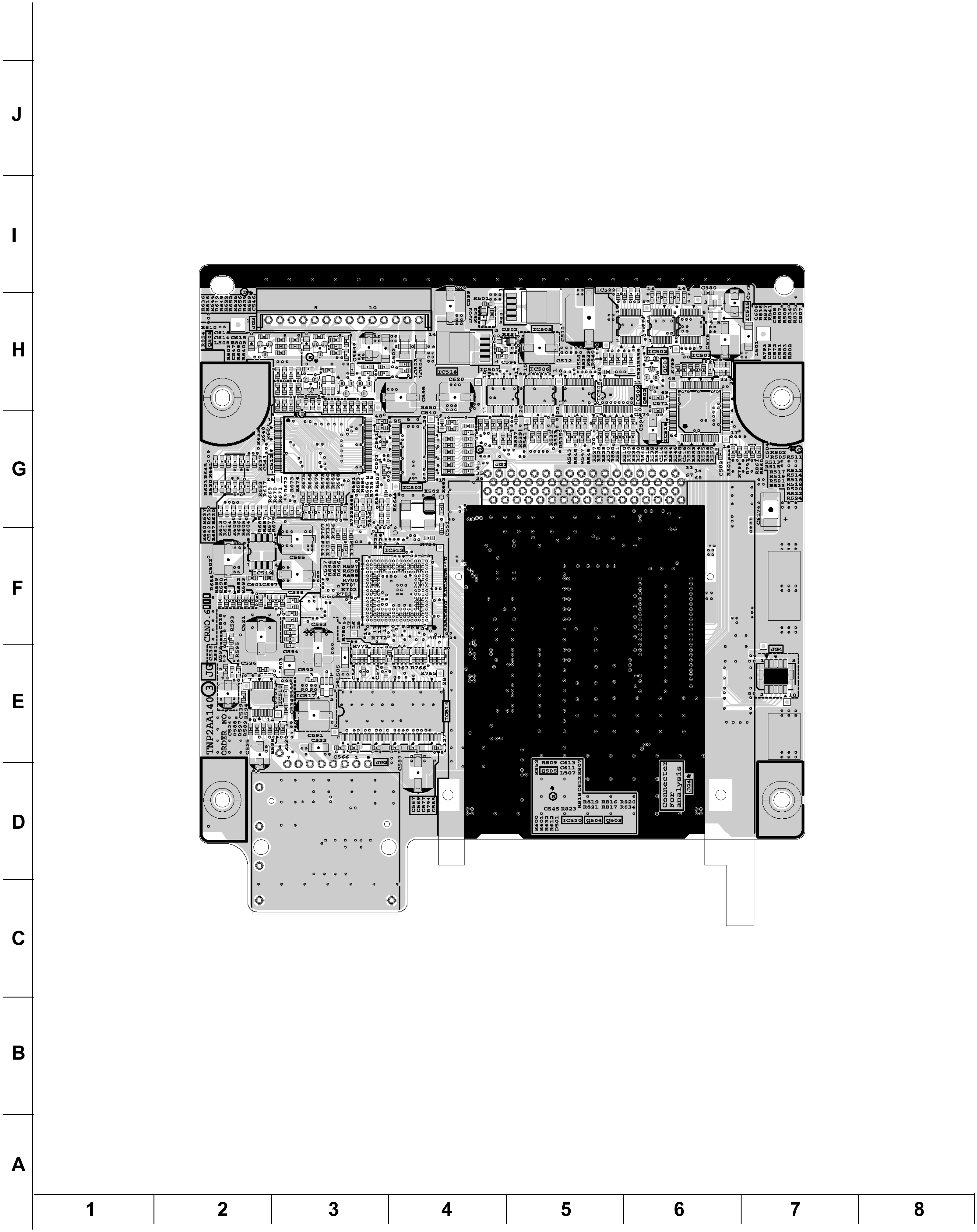

8Mbit FLASH
MD
IC6506
SN74AHCT541PWR (TSSOP)
IC6507
SN74AHCT541PWR (TSSOP)
IC6508
SN74AHCT541PWR (TSSOP)
IC6509
SN74LVC541APWR(TSSOP)
IC6512
8M-FLASH
IC6522
SN74LVC14APWR
SN74AHCT541PWR (TSSOP)
VIH:Min 2V, VIL:Max0.8V
VOH:Min 4.4V, VOL:Max 0.1V (IOH=50uA)
VOH:Min 3.8V, VOL:Max 0.44V (IOH=8mA)
Speed:5.3ns, Drive:8mA
/OE
Low:Conect
High:Hi-z
L:Hi-Z, H:A=B
C3FBKD000251:MBM29LV800BA-70PFTN-SFK-J1(PP)
C3FBKD000253:MBM29LV800BA-70PFTN-SFK-J2(MP)
3.3V
5V
5VCARD
PCCENA
PCCVON
SDCENA
SDCDIN
SDCD
SDWP
GPIO
USART
NC
X6502
TP6502
TP6503
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8


MD2406
MD021
IC6513
IC6514
IC6515
IC6516
128Mbit SDRAM
128Mbit
or
TNP2
3.3V
1.8V
1.8V:100mA
9V
3.3V VDD
1.8V VDD
0V I/O GND
GPIO
USB
USART
JTAG
NC
Q6501
Q6502
Q6505
Q6506
X6502
L6502
L6507
L6508
INPUT_GND
AGND
MGND
K-J1(PP)
K-J2(MP)
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8

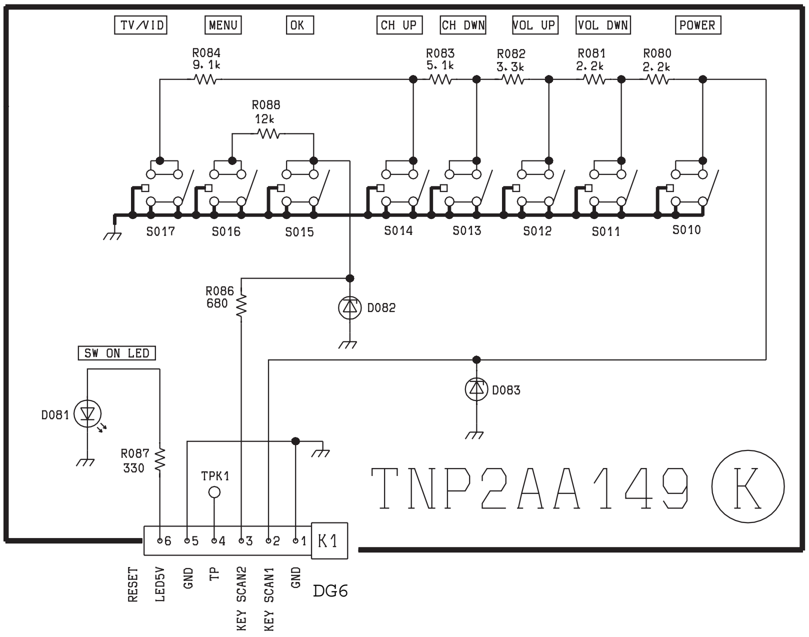

MD0217
IC6515
IC6516
IC6518
IC6519
SI-3018KS-TL
IC6513
IC6520
IC6514
or
128Mbit
it SDRAM
Q6502
Q6503
Q6504
Q6505
Q6506
JG3
DG7
INT1 -> GND : H4
INT0 -> GND : H4
IO0
GND
C
GND
Y
RESET
GND
RXD
TXD
GND
9V
5V
SYS_INT1
SYS_INT0
SYS_IO0
SYS_RST
RXD
TXD
YOUT
COUT
ENC_RST
RST
MAIN_RST
INPUT_GND
AGND
MGND
FG
3.3V
5V
9V
1.8V
1.8V:100mA
SDRAM GND
PCCARD GND
Digital GND
JS6503
JS6504
JS6511
TP6513
TP6514
TP6515
TP6516
TP6518
LC6503
LC6504
TNP2AA140 (JG)
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

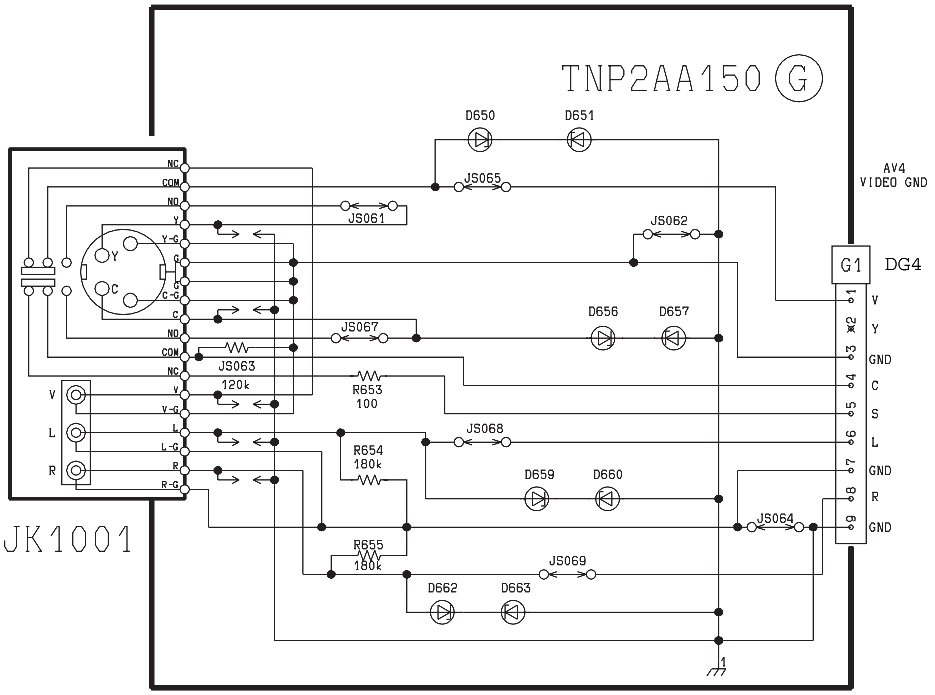

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
SEE REVERSE FOR ORDER NO.
TNP2AA140 ③ JG
CRNO.6
JG1
JG2
JG3
TP505
TP506
TP507
TP508
TP509
TP510
TP513
TP514
TP515
TP516
TP517
TP518
TP519
TP520
TP521
TP522
TP523
TP524
TP525
TP526
TP527
TP528
TP529
TP530
TP531
TP532
TP533
TP534

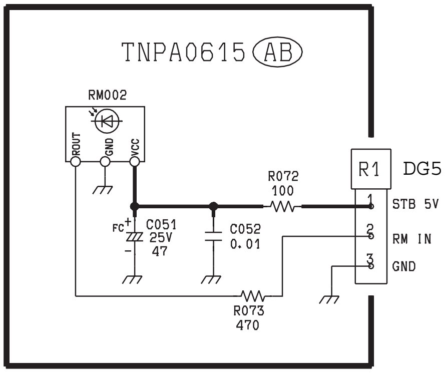
JG-PCB **BOTTOM VIEW** **TNP2AA140** **PT-47WXD63G / PT-53WXD63G**


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
TNP2AA140
JG
CRNO.
ORDER NO.
Connecter For analysis
IC503
IC505
IC506
IC513
IC514
IC517
IC518
IC519
IC520
JG1
JG2
JG4

JG-PCB TOP VIEW TNP2AA140 PT-47WXD63G / PT-53WXD63G


TV/VID
MENU
OK
CH UP
CH DWN
VOL UP
VOL DWN
POWER
R084 9.1k
R083 5.1k
R082 3.3k
R081 2.2k
R080 2.2k
R088 12k
S017
S016
S015
S014
S013
S012
S011
S010
R086 680
D082
SW ON LED
D083
D081
R087 330
TPK1
TNP2AA149 (K)
6 5 4 3 2 1
K1
RESET
LED5V
GND
TP
KEY SCAN2
KEY SCAN1
GND
DG6


TNP2AA150 (G)
D650
D651
JS065
AV4 VIDEO GND
NC
COM
NO
Y
Y-G
G
G
C-G
C
NO
COM
NC
V
V-G
L
L-G
R
R-G
Y
C
JS061
JS062
G1
DG4
JS067
D656
D657
JS063 120k
R653 100
V
L
R
JS068
R654 180k
D659
D660
JS064
R655 180k
JS069
D662
D663
1
JK1001
1 V
2 Y
3 GND
4 C
5 S
6 L
7 GND
8 R
9 GND


TNPA0615 (AB)
RM002
ROUT
GND
VCC
R1
DG5
R072 100
1 STB 5V
2 RM IN
3 GND
FC
C051 25V 47
C052 0.01
R073 470

J

I

H

G

F

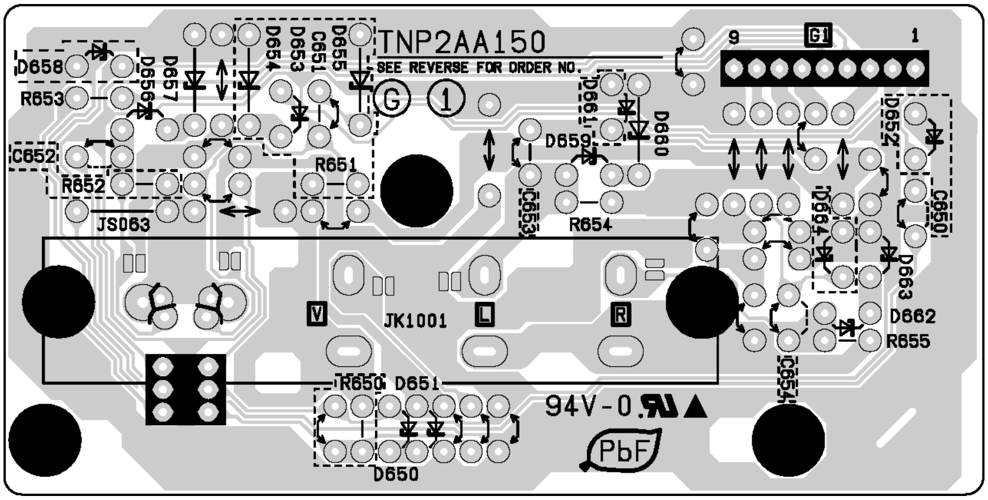
E

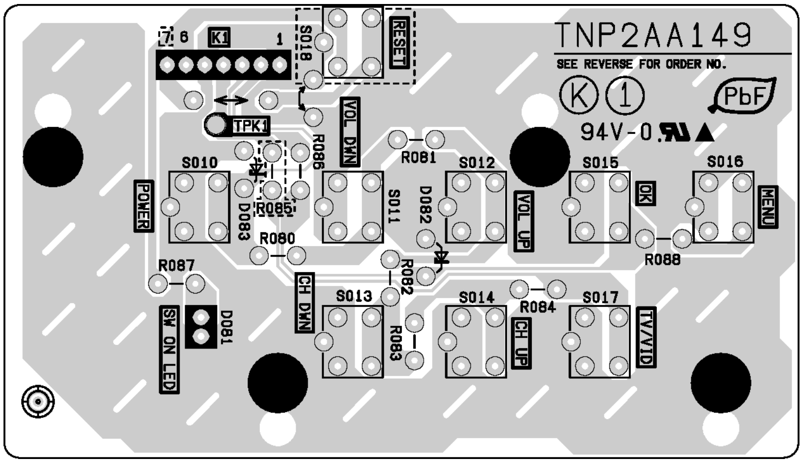
D

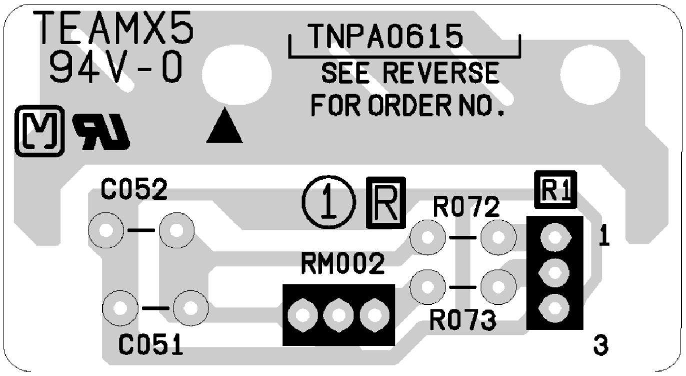
C

B

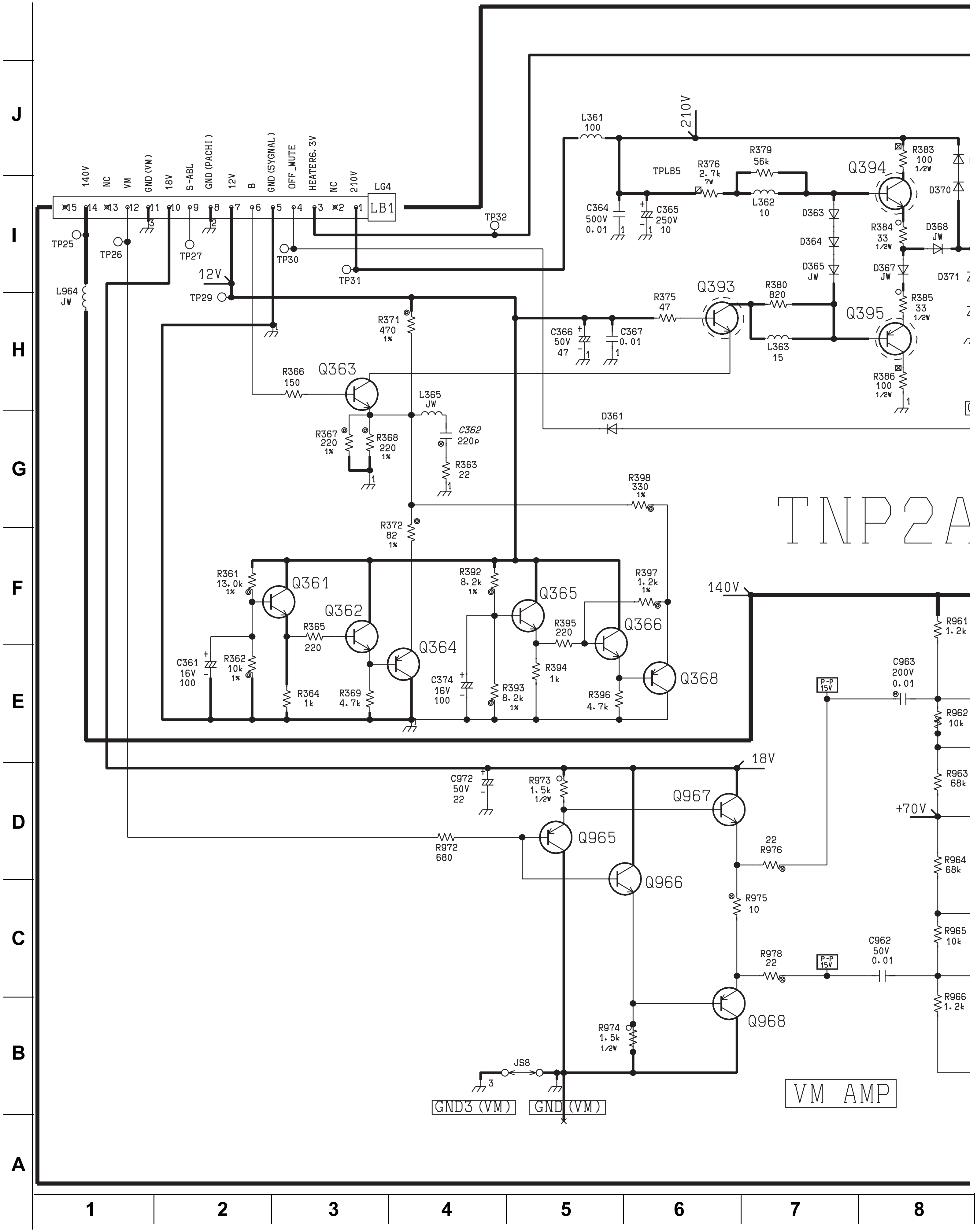
A

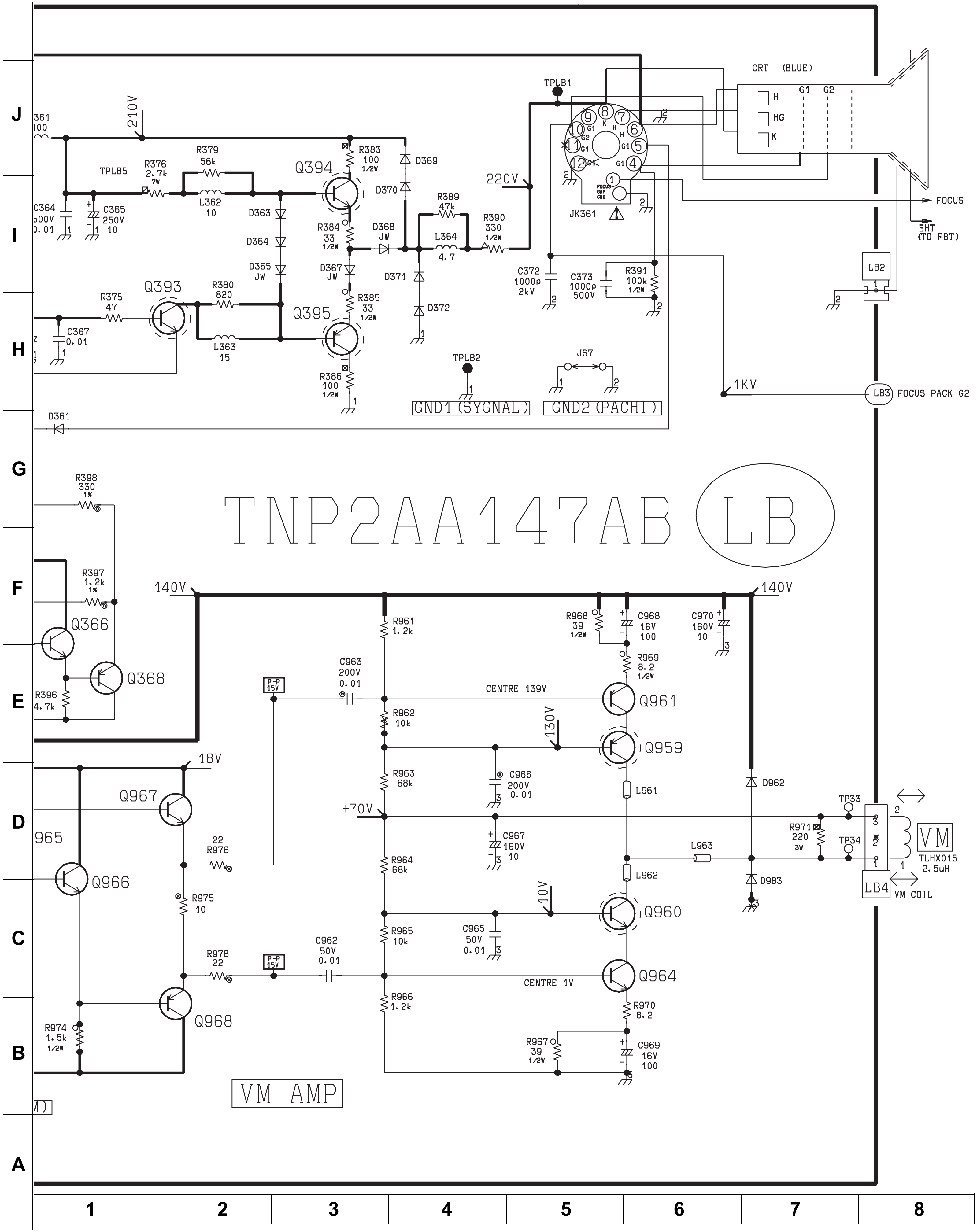

TNP2AA150
SEE REVERSE FOR ORDER NO.
G
1
9
G1
1
D658
R653
D656
D657
C652
R652
JS063
D654
D653
C651
D655
R651
D661
D659
D660
C653
R654
D652
C650
D664
D663
D662
R655
C654
V
JK1001
L
R
R650
D651
D650
94V-0
PbF


7
6
K1
1
S018
RESET
TNP2AA149
SEE REVERSE FOR ORDER NO.
K
1
PbF
94V-0
TPK1
R086
VOL DWN
R081
S010
S012
S015
S016
POWER
R085
D083
S011
D082
VOL UP
OK
MENU
R080
R088
R087
R082
CH DWN
S013
S014
R084
S017
SW ON LED
D081
R083
CH UP
TV/VID

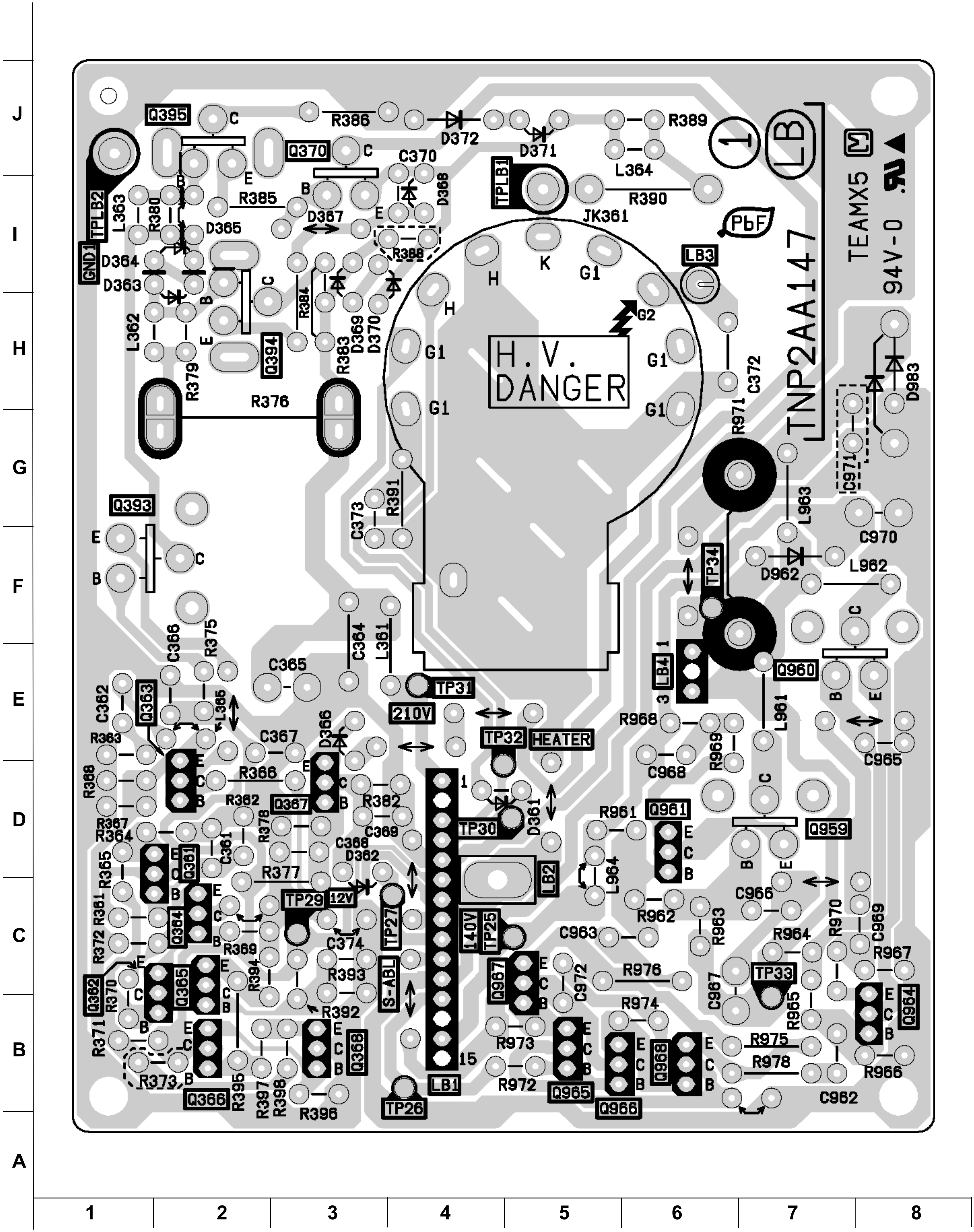

TEAMX5
94V-0
M
TNPA0615
SEE REVERSE
FOR ORDER NO.
C052
1
R
R1
R072
1
RM002
C051
R073
3

1 2 3 4 5 6 7 8

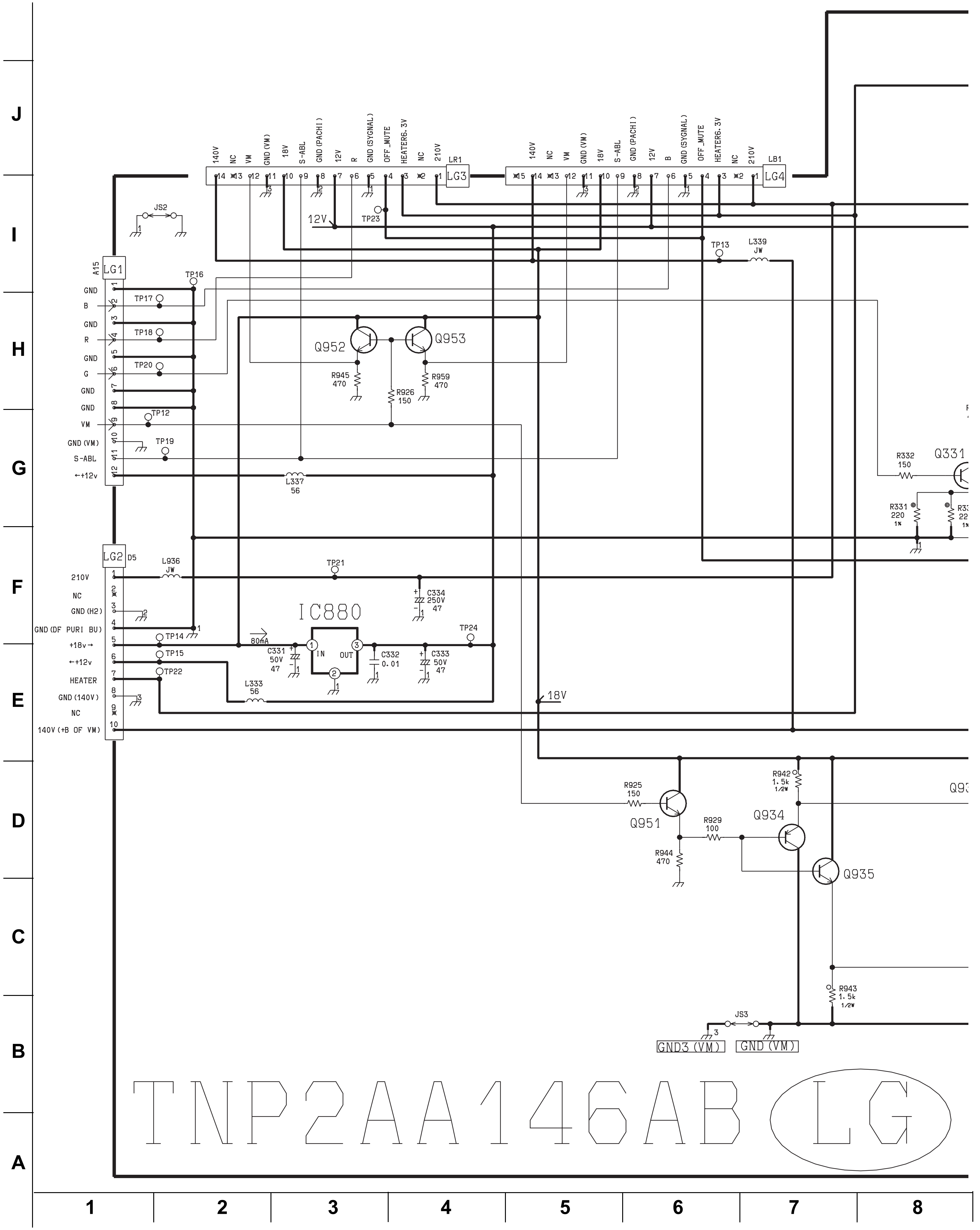

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
140V
NC
VM
GND (VM)
18V
S-ABL
GND (PACHI)
12V
B
GND (SYGNAL)
OFF_MUTE
HEATER6.3V
NC
210V
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
LG4
LB1
TP25
TP26
TP27
TP29
TP30
TP31
TP32
12V
L964 JW
L361 100
210V
R379 56k
R376 2.7k 7W
TPLB5
R383 100 1/2W
Q394
D370
C364 500V 0.01
C365 250V 10
L362 10
D363
D364
D365 JW
R384 33 1/2W
D368 JW
D367 JW
D371
R385 33 1/2W
Q393
R375 47
R380 820
Q395
C366 50V 47
C367 0.01
L363 15
R386 100 1/2W
R371 470 1%
R366 150
Q363
L365 JW
C362 220p
R367 220 1%
R368 220 1%
R363 22
D361
R398 330 1%
R372 82 1%
TNP2A
R361 13.0k 1%
Q361
Q362
R365 220
Q364
R392 8.2k 1%
Q365
R397 1.2k 1%
140V
R395 220
Q366
Q368
C361 16V 100
R362 10k 1%
R364 1k
R369 4.7k
C374 16V 100
R393 8.2k 1%
R394 1k
R396 4.7k
R961 1.2k
C963 200V 0.01
P-P 15V
R962 10k
18V
C972 50V 22
R973 1.5k 1/2W
Q967
R963 68k
+70V
R972 680
Q965
22 R976
Q966
R964 68k
R975 10
R978 22
P-P 15V
C962 50V 0.01
R965 10k
R966 1.2k
Q968
R974 1.5k 1/2W
JS8
3
GND3 (VM)
GND (VM)
VM AMP



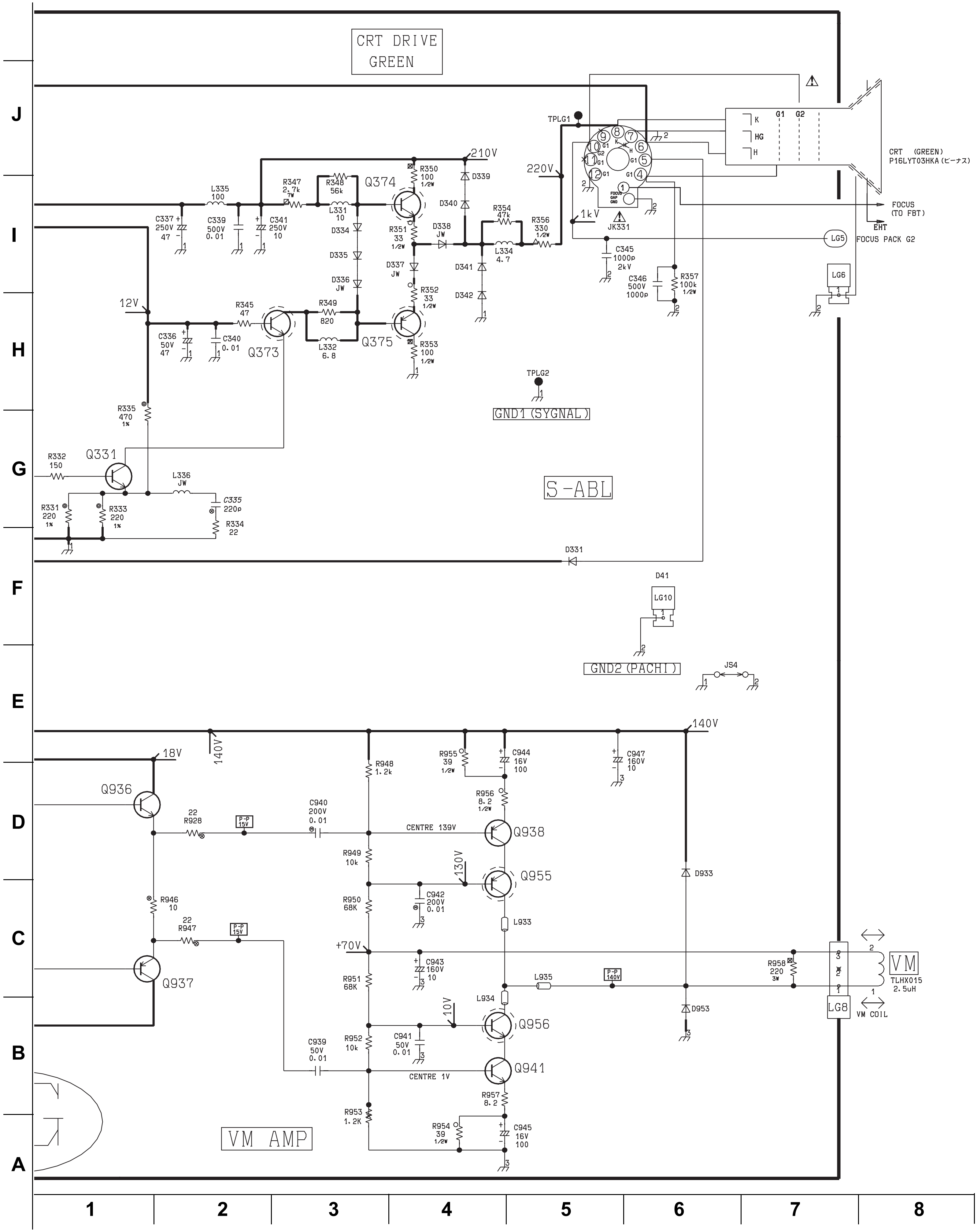
TNP2AA147AB LB
CRT (BLUE)
G1 G2
H HG K
TPLB1
TPLB2
TPLB5
JK361
210V
220V
1KV
140V
18V
130V
+70V
10V
FOCUS
EHT (TO FBT)
LB2
LB3 FOCUS PACK G2
LB4 VM COIL
VM
TLHX015 2.5uH
TP33
TP34
GND1 (SYGNAL)
GND2 (PACHI)
JS7
Q393
Q394
Q395
Q366
Q368
Q959
Q960
Q961
Q964
Q966
Q967
Q968
R375 47
R376 2.7k 7W
R379 56k
R380 820
R383 100 1/2W
R384 33 1/2W
R385 33 1/2W
R386 100 1/2W
R389 47k
R390 330 1/2W
R391 100k 1/2W
R396 4.7k
R397 1.2k 1%
R398 330 1%
R961 1.2k
R962 10k
R963 68k
R964 68k
R965 10k
R966 1.2k
R967 39 1/2W
R968 39 1/2W
R969 8.2 1/2W
R970 8.2
R971 220 3W
R974 1.5k 1/2W
R975 10
R976 22
R978 22
L361 100
L362 10
L363 15
L364 4.7
L961
L962
L963
C364 500V 0.01
C365 250V 10
C367 0.01
C372 1000p 2kV
C373 1000p 500V
C962 50V 0.01
C963 200V 0.01
C965 50V 0.01
C966 200V 0.01
C967 160V 10
C968 16V 100
C969 16V 100
C970 160V 10
D361
D363
D364
D365 JW
D367 JW
D368 JW
D369
D370
D371
D372
D962
D983
CENTRE 139V
CENTRE 1V
P-P 15V
VM AMP
J I H G F E D C B A
1 2 3 4 5 6 7 8


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
Q395
C
R386
D372
D371
R389
Q370
C370
L364
TPLB1
R390
TPLB2
L363
R380
R385
B
E
D368
JK361
PbF
D365
D367
R388
LB3
GND1
D364
D363
K
G1
H
L362
R384
D369
D370
Q394
R383
G2
H.V.
DANGER
G1
C372
TNP2AA147
TEAMX5
94V-0
LB
1
D983
R379
R376
R971
C971
Q393
C373
R391
L963
C970
E
F
B
TP34
D962
L962
C366
R375
C364
L361
C365
LB4
1
3
TP31
Q960
C362
Q363
L365
210V
R968
L961
D366
C367
TP32
HEATER
R969
C965
R363
C968
R368
R366
Q367
R382
D361
R961
Q961
Q959
R367
R362
R378
C369
R364
C361
C368
D362
TP30
L964
R365
Q361
R377
LB2
C966
R361
TP29
12V
R962
R963
Q364
C374
TP27
140V
TP25
C963
R964
R970
C969
R372
R369
R967
Q362
R370
Q365
R394
R393
S-ABL
Q967
C972
R976
C967
TP33
R965
Q964
R392
R974
R371
Q368
R973
R975
R373
R972
Q968
R978
R966
Q366
R395
R397
R398
R396
TP26
LB1
15
Q965
Q966
C962

LB-BOARD TNP2AA147 PT-47WXD63G / PT-53WXD63G



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
140V
NC
VM
GND (VM)
18V
S-ABL
GND (PACHI)
12V
R
GND (SYGNAL)
OFF_MUTE
HEATER6.3V
NC
210V
LR1
LG3
B
LB1
LG4
JS2
12V
TP23
TP13
L339
JW
A15
LG1
TP16
GND
B
TP17
GND
R
TP18
GND
G
TP20
GND
GND
VM
TP12
GND (VM)
S-ABL
TP19
←+12v
Q952
Q953
R945
470
R926
150
R959
470
L337
56
R332
150
Q331
R331
220
1%
LG2
D5
210V
NC
GND (H2)
GND (DF PURI BU)
+18v→
←+12v
HEATER
GND (140V)
NC
140V (+B OF VM)
L936
JW
TP21
C334
250V
47
IC880
TP14
TP15
TP22
80mA
C331
50V
47
IN
OUT
C332
0.01
C333
50V
47
TP24
L333
56
18V
R925
150
Q951
R942
1.5k
1/2W
R929
100
Q934
R944
470
Q935
R943
1.5k
1/2W
JS3
GND3 (VM)
GND (VM)
TNP2AA146AB
LG


CRT DRIVE GREEN
210V
220V
1kV
12V
TPLG1
TPLG2
GND1(SYGNAL)
S-ABL
GND2(PACHI)
JS4
D41
LG10
LG5
LG6
LG8
JK331
CRT (GREEN) P16LYT03HKA(ビーナス)
FOCUS (TO FBT)
EHT
FOCUS PACK G2
K
HG
H
G1
G2
Q374
Q375
Q373
Q331
C337 250V 47
C339 500V 0.01
C341 250V 10
L335 100
R347 2.7k 7W
R348 56k
L331 10
R350 100 1/2W
D339
D340
R351 33 1/2W
D334
D335
D336 JW
D337 JW
D338 JW
R354 47k
L334 4.7
R356 330 1/2W
D341
D342
R352 33 1/2W
R353 100 1/2W
R345 47
R349 820
L332 6.8
C336 50V 47
C340 0.01
C345 1000p 2kV
C346 500V 1000p
R357 100k 1/2W
R335 470 1%
R332 150
L336 JW
C335 220p
R334 22
R331 220 1%
R333 220 1%
D331
VM AMP
18V
140V
Q936
Q937
Q938
Q955
Q956
Q941
R928 22
R947 22
R946 10
P-P 15V
P-P 140V
C940 200V 0.01
C939 50V 0.01
CENTRE 139V
CENTRE 1V
R948 1.2k
R949 10k
R950 68K
R951 68K
R952 10k
R953 1.2K
R955 39 1/2W
R954 39 1/2W
C944 16V 100
C945 16V 100
R956 8.2 1/2W
R957 8.2
C942 200V 0.01
C941 50V 0.01
C943 160V 10
C947 160V 10
130V
10V
+70V
L933
L934
L935
D933
D953
R958 220 3W
VM
TLHX015 2.5uH
VM COIL
A
B
C
D
E
F
G
H
I
J
1
2
3
4
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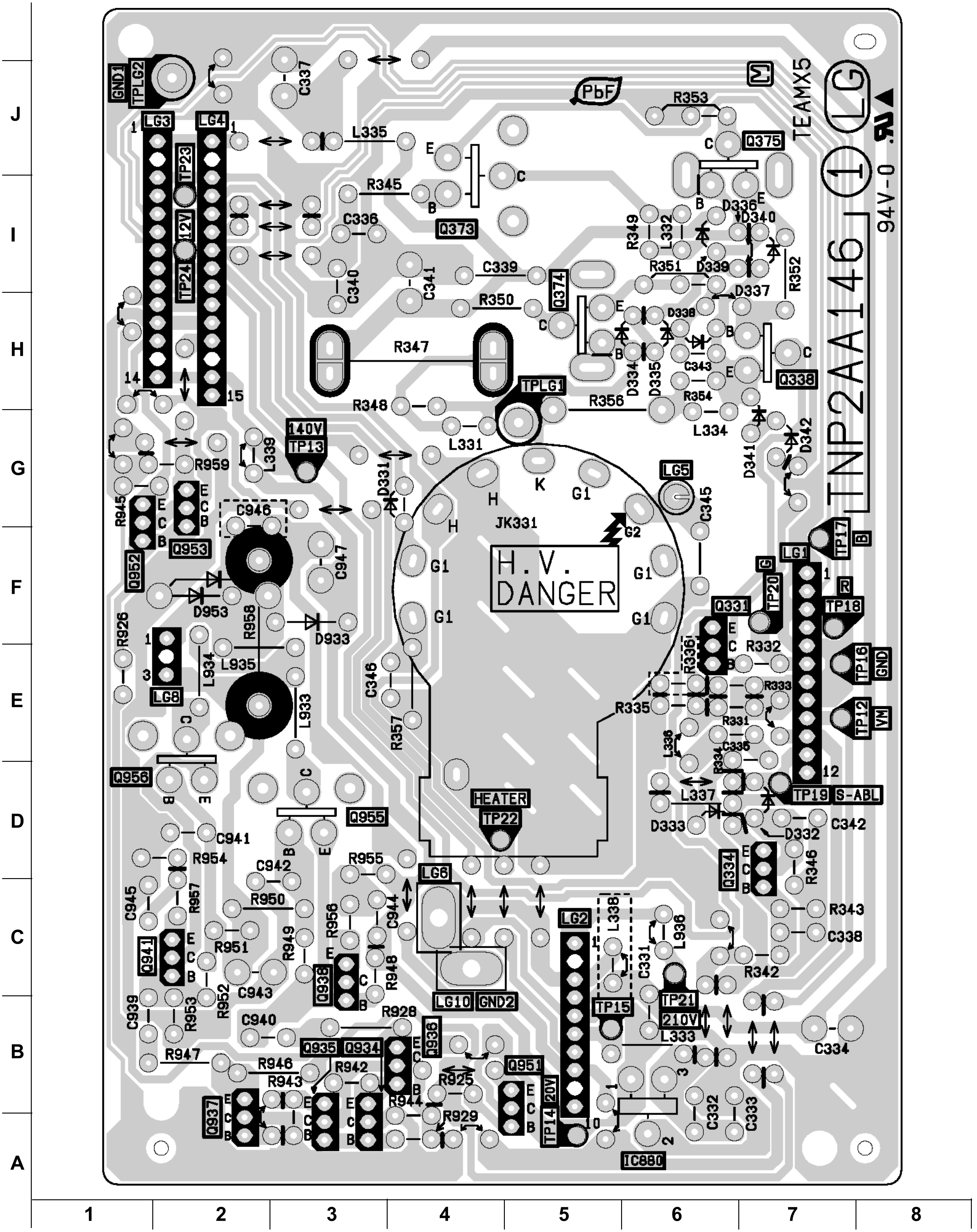
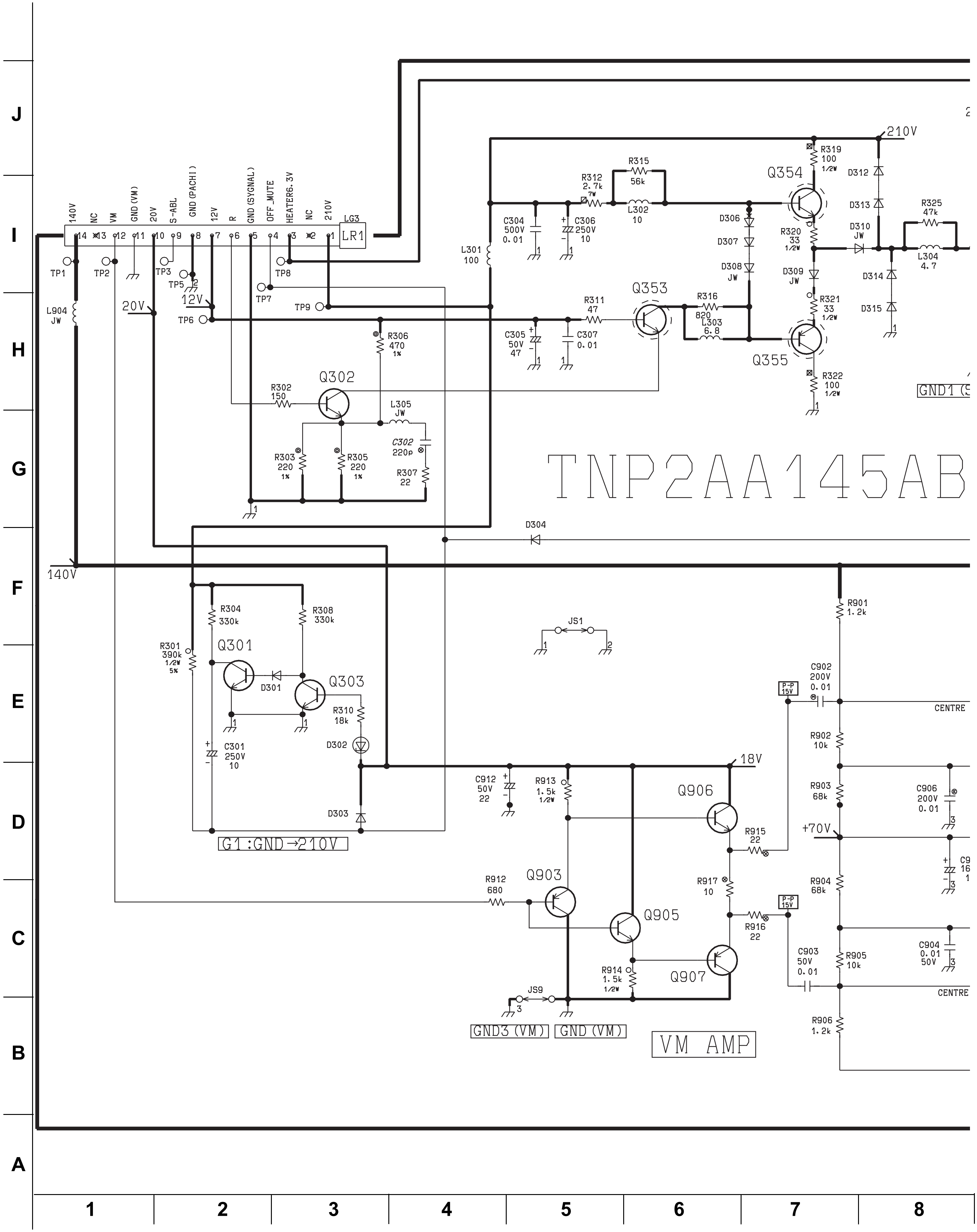
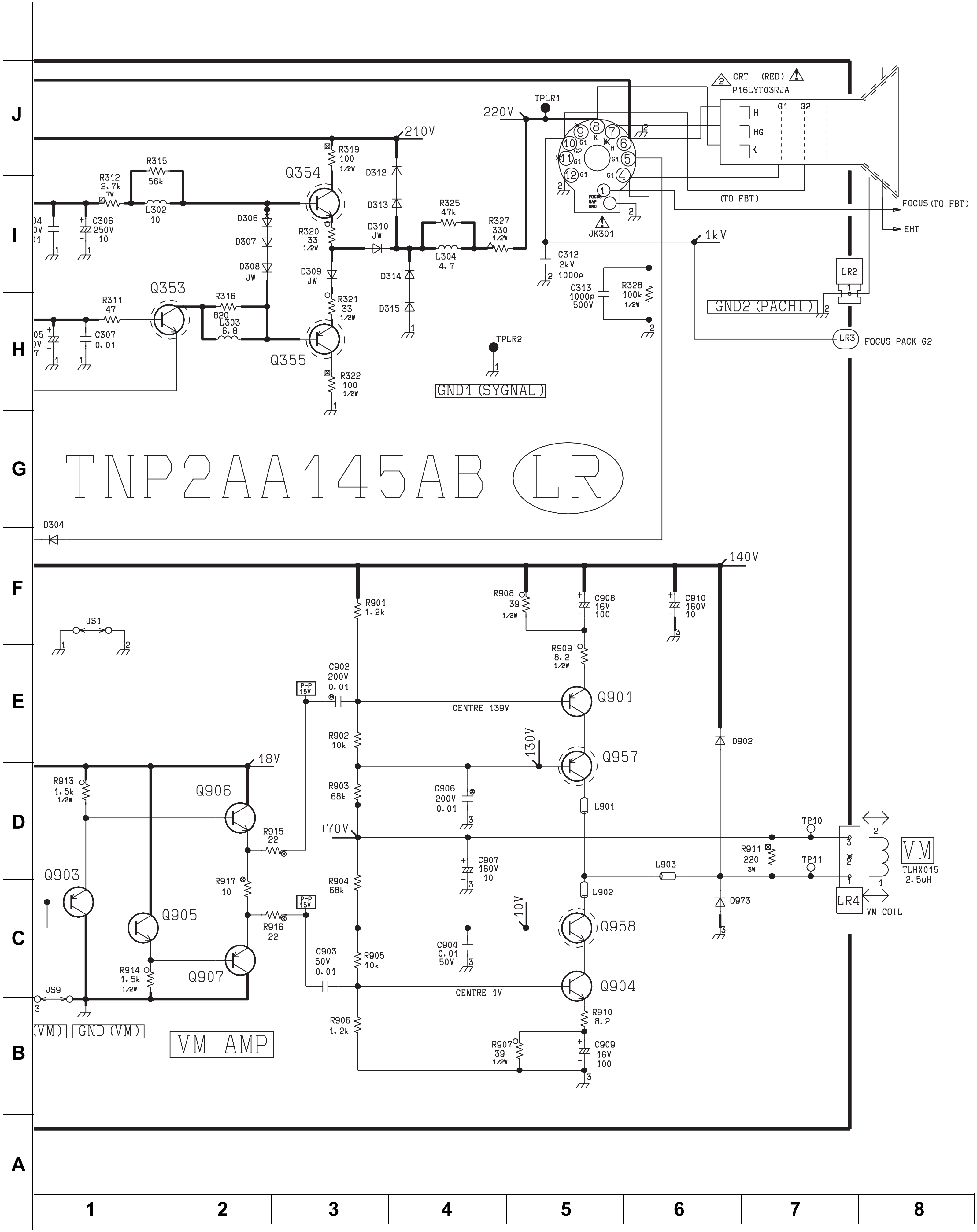
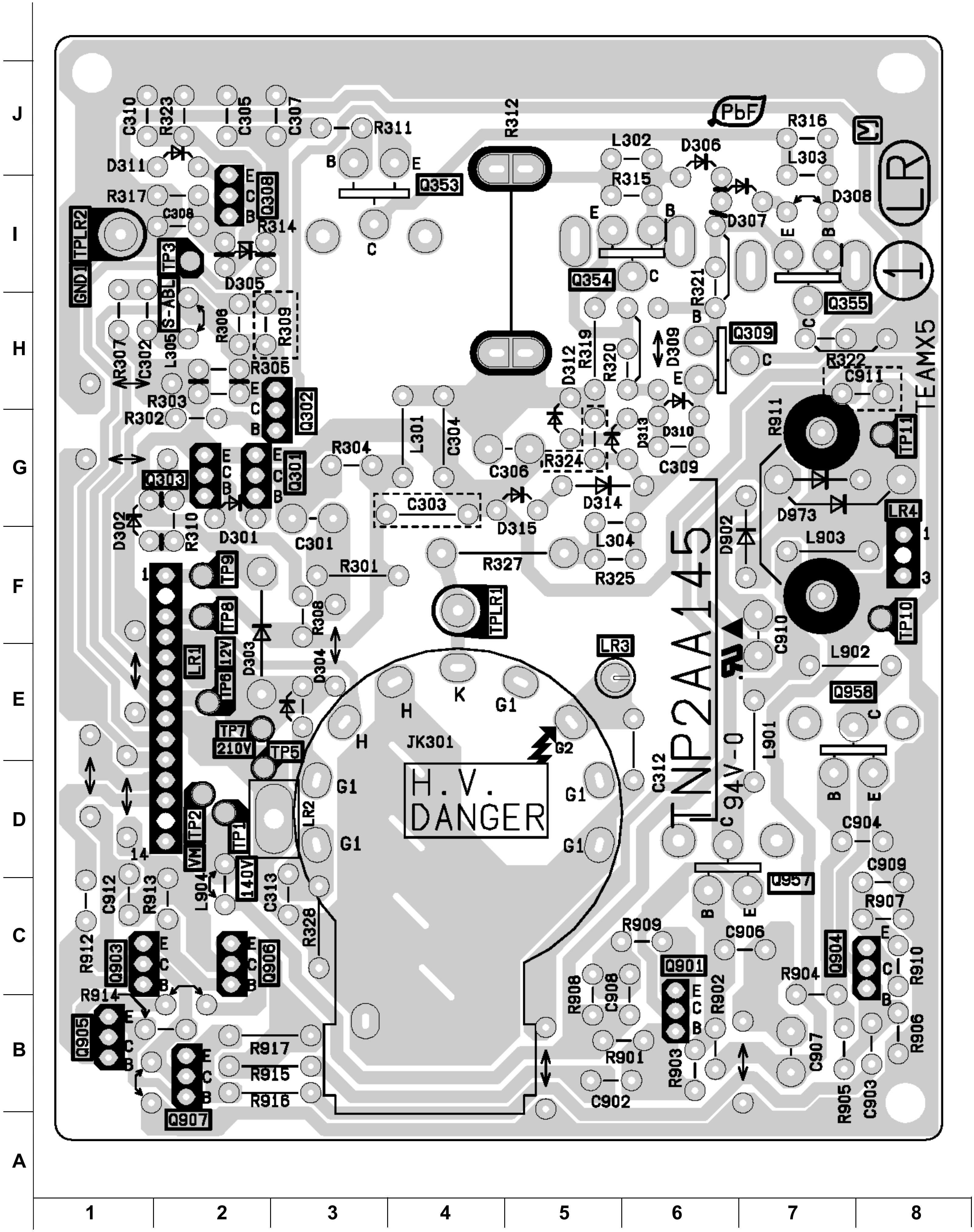
6
7
8


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
GND1
TPLG2
LG3
LG4
TP23
12V
TP24
C337
L335
R345
Q373
C336
C340
C341
C339
R350
Q374
R347
R348
L331
TPLG1
R356
PbF
R353
Q375
TEAMX5
LG
94V-0
TNP2AA146
R349
L332
D336
D340
R351
D339
R352
D337
D338
D334
D335
C343
R354
L334
Q338
D341
D342
140V
TP13
L339
R959
R945
Q952
Q953
C946
C947
D953
D933
R958
R926
LG8
L934
L935
L933
D331
JK331
H.V.
DANGER
LG5
C345
TP17
LG1
TP20
TP18
TP16
GND
TP12
VM
Q331
R336
R332
R333
R335
R331
L336
C335
R334
L337
TP19
S-ABL
D333
D332
C342
C346
R357
Q956
Q955
HEATER
TP22
C941
R954
C942
R955
LG6
C945
R957
R950
C944
Q941
R951
R949
R956
R948
Q938
C943
R952
C939
R953
C940
R928
Q936
LG10
GND2
LG2
L338
L936
C331
TP15
TP21
210V
L333
Q334
R346
R343
C338
R342
C334
R947
R946
Q935
Q934
R942
R943
R925
Q951
R944
R929
Q937
20V
TP14
IC880
C332
C333


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
140V
NC
VM
GND (VM)
20V
S-ABL
GND (PACHI)
12V
R
GND (SYGNAL)
OFF_MUTE
HEATER6.3V
NC
210V
LG3
LR1
14 13 12 11 10 9 8 7 6 5 4 3 2 1
TP1
TP2
TP3
TP5
TP6
TP7
TP8
TP9
L904 JW
20V
12V
140V
210V
R319 100 1/2W
Q354
D312
D313
R325 47k
D310 JW
L304 4.7
D314
D315
R315 56k
R312 2.7k 7W
L302 10
C304 500V 0.01
C306 250V 10
L301 100
D306
D307
D308 JW
R320 33 1/2W
D309 JW
R321 33 1/2W
Q353
R311 47
R316 820
L303 6.8
Q355
R322 100 1/2W
C305 50V 47
C307 0.01
R306 470 1%
Q302
R302 150
L305 JW
C302 220p
R303 220 1%
R305 220 1%
R307 22
GND1 (S
TNP2AA145AB
D304
R304 330k
R308 330k
R301 390k 1/2W 5%
Q301
D301
Q303
R310 18k
D302
C301 250V 10
D303
G1:GND→210V
JS1
R901 1.2k
C902 200V 0.01
P-P 15V
CENTRE
R902 10k
R903 68k
C906 200V 0.01
+70V
18V
C912 50V 22
R913 1.5k 1/2W
Q906
R915 22
Q903
R912 680
R917 10
Q905
R916 22
P-P 15V
R904 68k
C9 16 1
C903 50V 0.01
R905 10k
C904 0.01 50V
Q907
R914 1.5k 1/2W
JS9
GND3 (VM)
GND (VM)
VM AMP
CENTRE
R906 1.2k


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
CRT (RED)
P16LYT03RJA
G1
G2
H
HG
K
TPLR1
220V
210V
R319
100
1/2W
Q354
R315
56k
R312
2.7k
7W
L302
10
C306
250V
10
D306
D307
D308
JW
R320
33
1/2W
D312
D313
D310
JW
R325
47k
L304
4.7
R327
330
1/2W
D309
JW
D314
D315
R321
33
1/2W
Q353
R311
47
R316
820
L303
6.8
C307
0.01
Q355
R322
100
1/2W
TPLR2
GND1 (SYGNAL)
JK301
FOCUS
GAP
GND
(TO FBT)
FOCUS (TO FBT)
EHT
1kV
C312
2kV
1000p
C313
1000p
500V
R328
100k
1/2W
LR2
GND2 (PACHI)
LR3
FOCUS PACK G2
TNP2AA145AB
LR
D304
140V
R901
1.2k
R908
39
1/2W
C908
16V
100
C910
160V
10
JS1
R909
8.2
1/2W
C902
200V
0.01
P-P
15V
CENTRE 139V
Q901
R902
10k
130V
Q957
D902
18V
R913
1.5k
1/2W
Q906
R903
68k
C906
200V
0.01
L901
+70V
R915
22
TP10
R911
220
3W
TP11
VM
TLHX015
2.5uH
Q903
R917
10
R904
68k
C907
160V
10
L903
L902
D973
LR4
VM COIL
Q905
R916
22
10V
Q958
C903
50V
0.01
R905
10k
C904
0.01
50V
Q907
R914
1.5k
1/2W
CENTRE 1V
Q904
JS9
R910
8.2
R906
1.2k
R907
39
1/2W
C909
16V
100
(VM)
GND (VM)
VM AMP



J
I
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G
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E
D
C
B
A
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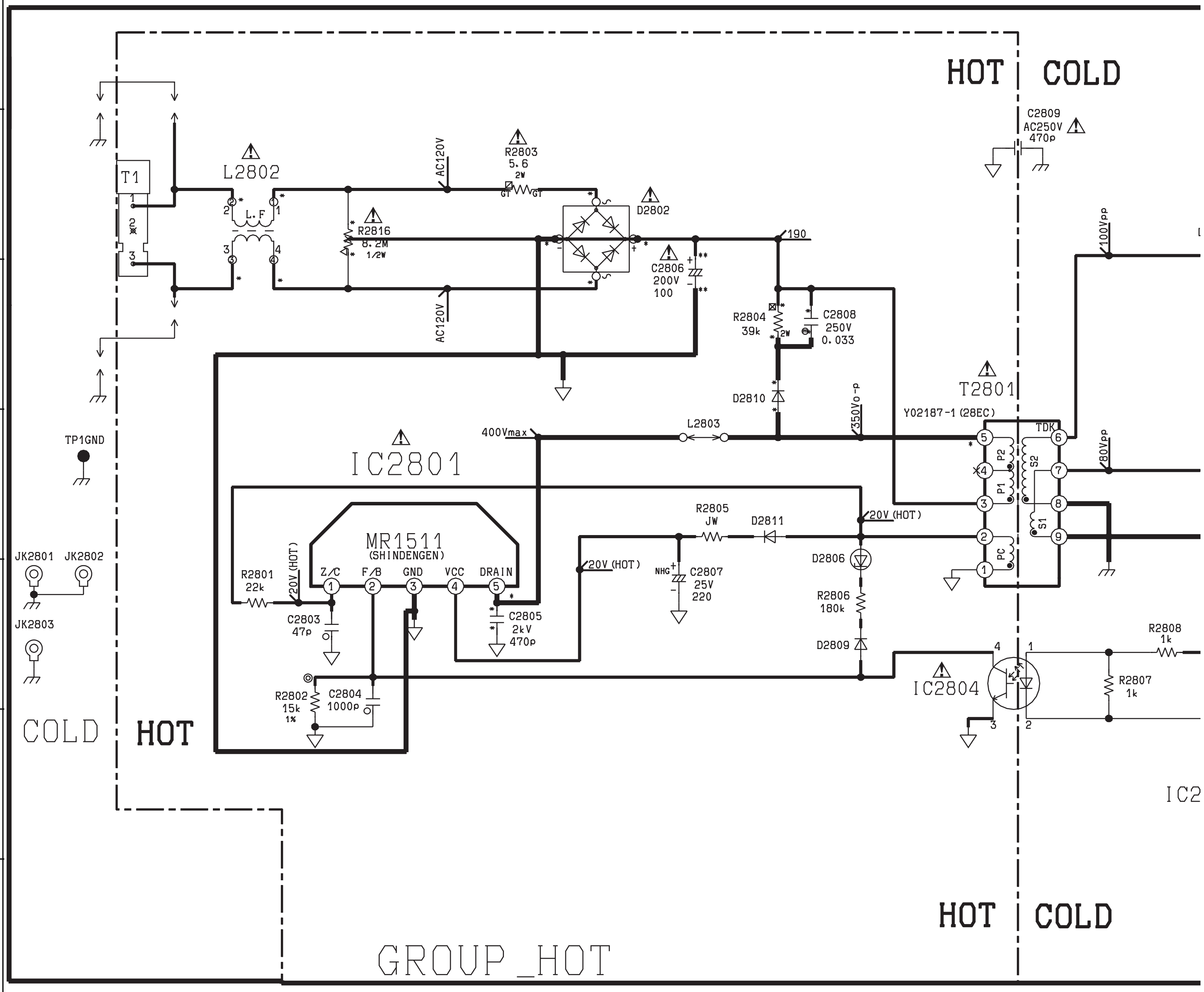
2
3
4
5
6
7
8
C310
R323
C305
C307
R311
R312
PbF
R316
L302
D306
D311
B
E
Q353
L303
E
Q308
C
B
R315
D308
LR
R317
C308
R314
E
B
D307
TPLR2
C
TP3
GND1
Q354
C
R321
E
B
D305
S-ABL
R309
R306
Q355
1
B
Q309
D309
C
R322
TEAMX5
R307
C302
L305
R305
D312
R319
R320
E
C911
R303
E
C
B
Q302
R302
L301
C304
R911
D313
D310
TP11
R304
R324
G
E
C
B
Q303
E
C
B
Q301
C306
C309
D314
D973
C303
D315
LR4
1
3
D302
R310
D301
C301
L304
D902
L903
R301
R327
R325
TNP2AA145
1
TP9
TP8
12V
LR1
R308
D303
D304
TPLR1
C910
TP10
L902
LR3
TP6
K
G1
H
Q958
C
L901
H
JK301
94V-0
TP7
210V
TP5
G2
H.V.
DANGER
C312
B
E
G1
G1
LR2
TP2
VM
TP1
140V
G1
G1
C
C904
14
C313
C909
L904
R913
C912
Q957
R907
E
B
E
C
B
Q903
E
C
B
Q906
R328
R909
C906
R912
E
Q904
C
B
R910
R908
C908
Q901
E
C
B
R902
R904
R914
Q905
E
C
B
C907
R906
R917
R901
R903
E
C
B
R915
Q907
R916
C902
R905
C903

LR-BOARD TNP2AA145 PT-47WXD63G / PT-53WXD63G


HOT
COLD
C2809
AC250V
470p
T1
L2802
L.F
AC120V
R2803
5.6
2W
R2816
8.2M
1/2W
D2802
C2806
200V
100
190
100Vpp
R2804
39k
1/2W
C2808
250V
0.033
D2810
T2801
Y02187-1 (28EC)
TDK
P2
P1
PC
S2
S1
L2803
350Vo-p
400Vmax
80Vpp
TP1GND
IC2801
MR1511
(SHINDENGEN)
Z/C
F/B
GND
VCC
DRAIN
R2801
22k
20V (HOT)
C2803
47p
C2805
2kV
470p
R2805
JW
D2811
C2807
25V
220
NHG
D2806
R2806
180k
D2809
R2802
15k
1%
C2804
1000p
IC2804
R2808
1k
R2807
1k
IC2
JK2801
JK2802
JK2803
COLD
HOT
HOT
COLD
GROUP_HOT

J
I
H
G
F
E
D
C
B
A
1
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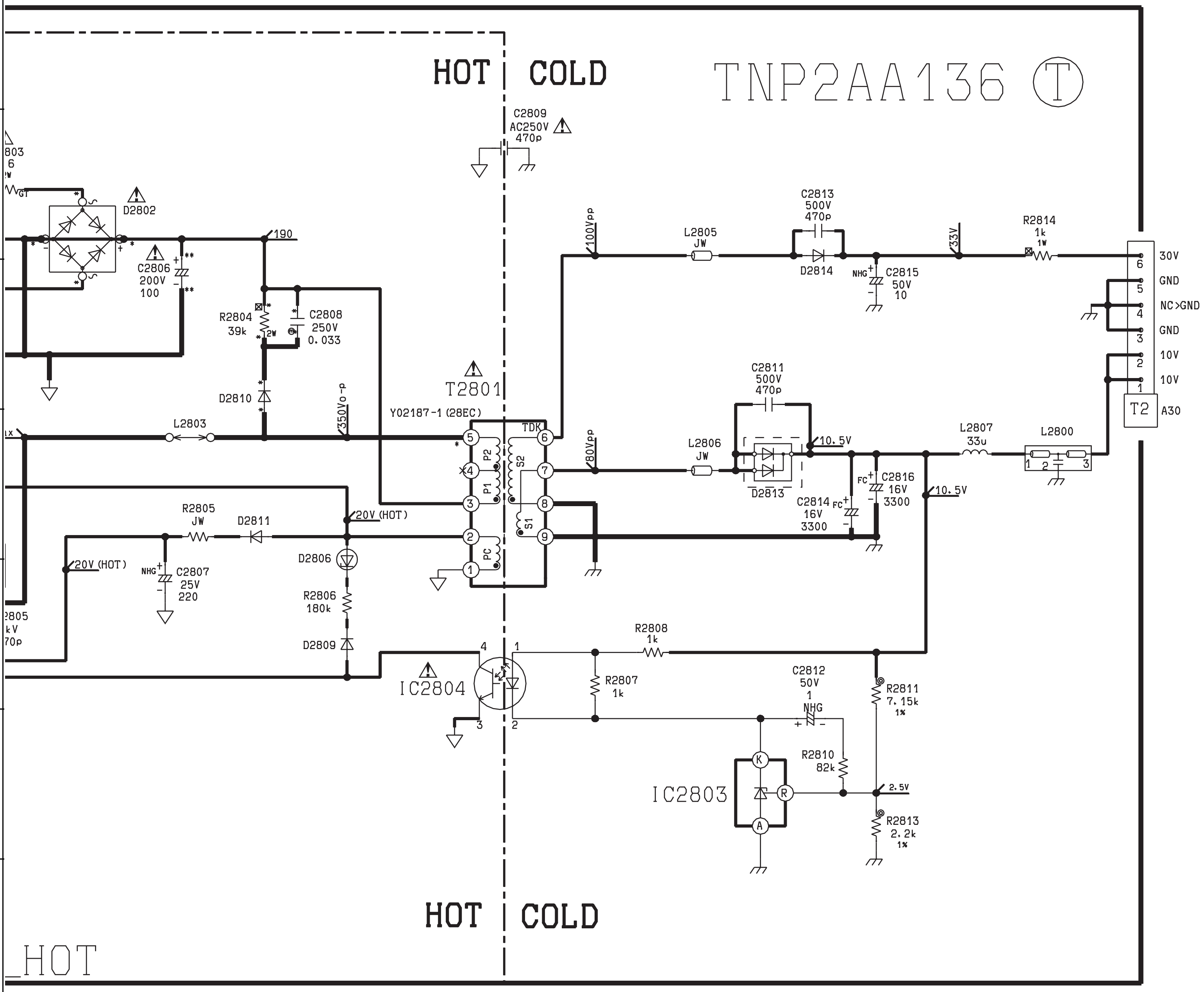
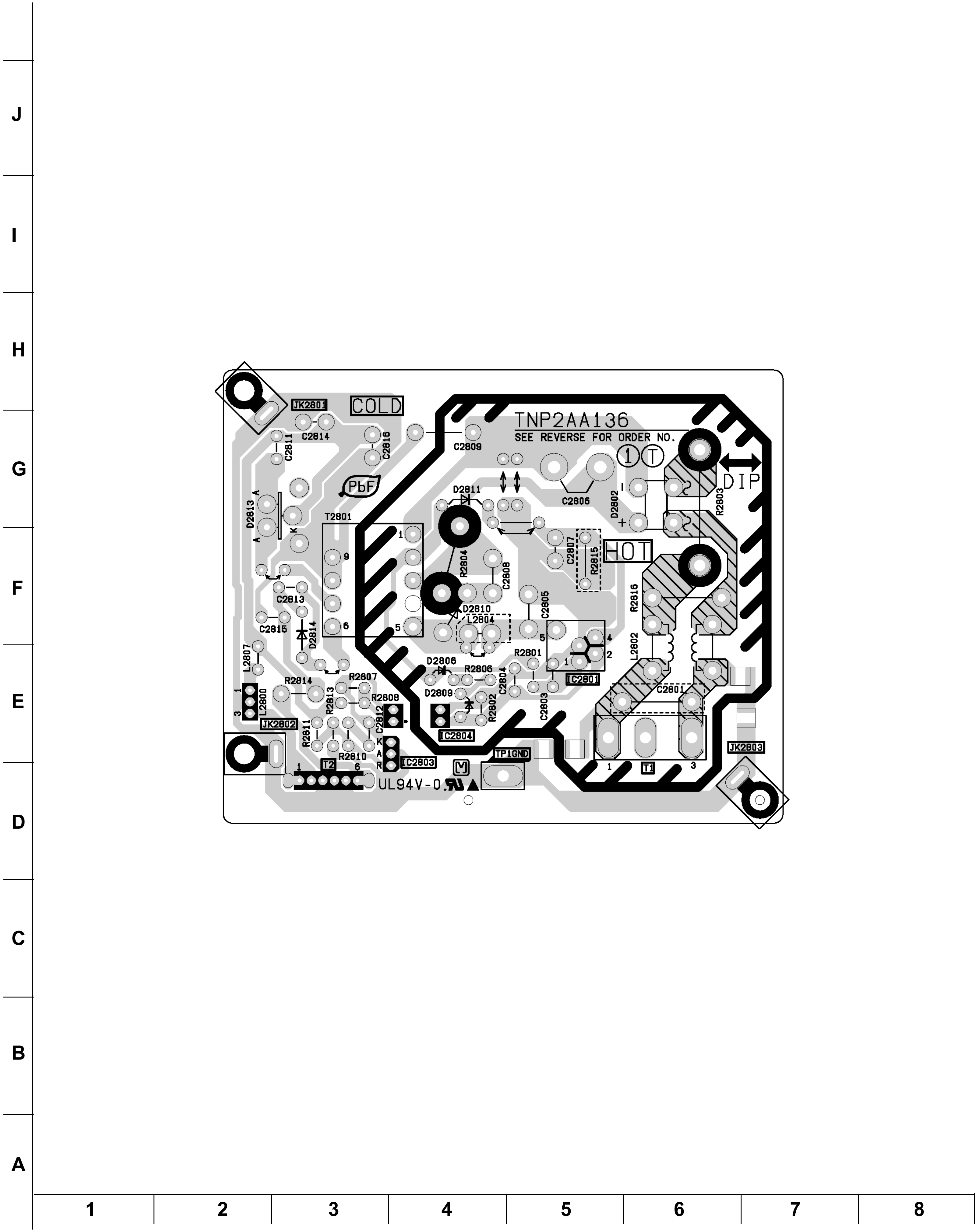
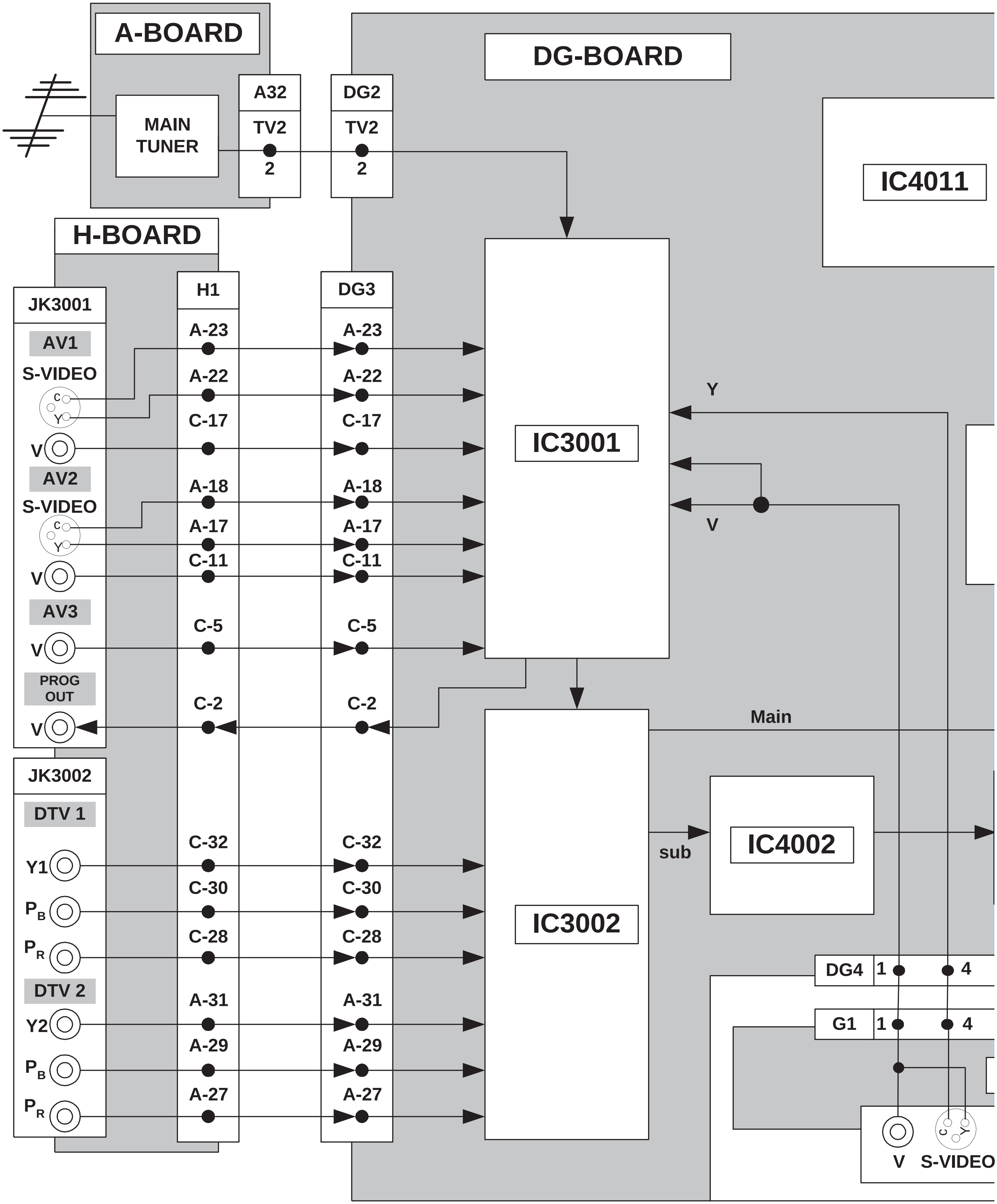
3
4
5
6
7
8

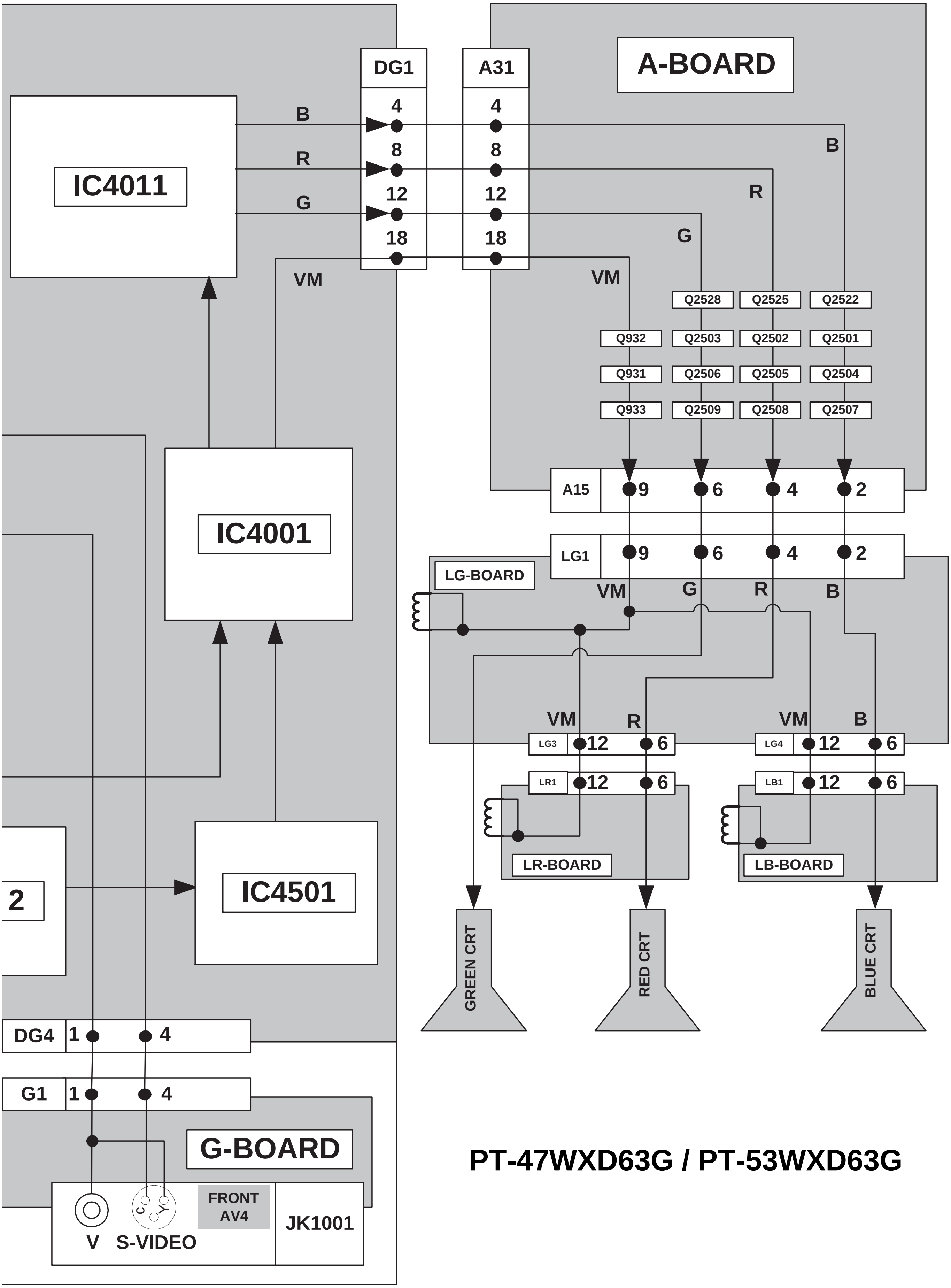


HOT
COLD
TNP2AA136 Ⓣ
C2809
AC250V
470p
803
6
GT
D2802
190
C2806
200V
100
R2804
39k
2W
C2808
250V
0.033
D2810
L2803
350Vo-p
T2801
Y02187-1 (28EC)
TDK
P2
P1
PC
S2
S1
100Vpp
L2805
JW
C2813
500V
470p
D2814
NHG
C2815
50V
10
33V
R2814
1k
1W
30V
GND
NC>GND
GND
10V
10V
T2
A30
C2811
500V
470p
80Vpp
L2806
JW
10.5V
D2813
FC
C2814
16V
3300
C2816
16V
3300
10.5V
L2807
33u
L2800
R2805
JW
D2811
20V (HOT)
D2806
20V (HOT)
C2807
25V
220
R2806
180k
D2809
2805
kV
70p
IC2804
R2808
1k
R2807
1k
C2812
50V
1
NHG
R2811
7.15k
1%
R2810
82k
IC2803
2.5V
R2813
2.2k
1%
HOT
COLD
HOT


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
JK2801
COLD
TNP2AA136
SEE REVERSE FOR ORDER NO.
① T
DIP
C2814
C2811
C2816
C2809
PbF
D2811
C2806
D2802
R2803
D2813
A
K
T2801
1
9
6
5
R2804
C2808
C2807
R2815
HOT
C2813
C2815
D2814
D2810
L2804
C2805
R2816
L2802
L2807
D2806
R2806
R2801
IC2801
4
2
1
R2814
R2807
C2804
L2800
JK2802
R2813
R2808
D2809
R2802
C2803
C2801
C2812
IC2804
R2811
R2810
K
A
R
IC2803
T2
TP1GND
T1
3
JK2803
UL94V-0

Video signal path block diagram


A-BOARD
MAIN TUNER
A32
TV2
2
DG2
TV2
2
DG-BOARD
IC4011
H-BOARD
JK3001
AV1
S-VIDEO
C
Y
V
AV2
S-VIDEO
C
Y
V
AV3
V
PROG OUT
V
H1
A-23
A-22
C-17
A-18
A-17
C-11
C-5
C-2
DG3
A-23
A-22
C-17
A-18
A-17
C-11
C-5
C-2
IC3001
Y
V
Main
JK3002
DTV 1
Y1
P_B
P_R
DTV 2
Y2
P_B
P_R
C-32
C-30
C-28
A-31
A-29
A-27
C-32
C-30
C-28
A-31
A-29
A-27
IC3002
sub
IC4002
DG4
1
4
G1
1
4
C
Y
V
S-VIDEO


A-BOARD
DG1
A31
4
8
12
18
B
R
G
VM
IC4011
IC4001
IC4501
2
Q2528
Q2525
Q2522
Q932
Q2503
Q2502
Q2501
Q931
Q2506
Q2505
Q2504
Q933
Q2509
Q2508
Q2507
A15
9
6
4
2
LG1
LG-BOARD
LG3
12
6
LG4
LR1
LB1
LR-BOARD
LB-BOARD
GREEN CRT
RED CRT
BLUE CRT
DG4
1
4
G1
G-BOARD
FRONT
AV4
JK1001
V
S-VIDEO
C
Y

PT-47WXD63G / PT-53WXD63G

A - BOARD - TNP2AH051

IC1101	
1	0.00
2	0.00
3	0.00
4	0.00
5	2.30
6	2.60
7	0.00
8	3.30

IC1112	
1	0.00
2	0.00
3	0.00
4	0.00
5	4.90
6	4.90
7	4.90
8	4.90

IC2302			
1	-23.00	14	-21.60
2	-23.00	15	0.00
3	0.30	16	-5.50
4	22.10	17	0.00
5	9.60	18	0.00
6	5.00	19	0.00
7	0.00	20	0.00
8	2.60	21	9.50
9	0.00	22	22.10
10	0.00	23	0.20
11	0.00	24	-23.00
12	5.30	25	-12.50
13	0.00		

IC2451			
1	4.40	16	8.90
2	4.50	17	4.70
3	4.50	18	0.00
4	4.50	19	4.30
5	4.50	20	4.10
6	4.50	21	4.50
7	4.50	22	4.50
8	4.50	23	4.50
9	1.60	24	4.50
10	4.50	25	4.50
11	1.60	26	4.50
12	1.60	27	4.50
13	4.90	28	4.50
14	4.90	29	4.50
15	0.00	30	4.40

IC2851	
1	0.00
2	10.40
3	7.70
4	5.00
5	6.70

IC871	
1	19.40
2	5.10
3	0.00
4	1.30
5	6.70

IC872	
1	19.40
2	9.00
3	0.00
4	9.00
5	2.30

IC873	
1	19.40
2	2.60
3	0.00
4	1.30
5	6.70

IC874	
1	19.40
2	5.10
3	0.00
4	1.30
5	6.70

A - BOARD - TNP2AH051

	Q2301	Q2302	Q2304	Q2451	Q2452	Q2501	Q2502	Q2503	Q2304
B	19.50	19.50	0.10	4.50	4.50	2.80	2.80	2.90	10.90
C	-0.10	-1.30	19.50	8.90	8.90	10.90	10.90	10.90	3.30
E	13.50	13.50	0.20	3.80	3.80	2.20	2.20	2.30	11.50

	Q2505	Q2506	Q2507	Q2508	Q2509	Q2510	Q2516	Q2517	Q2522
B	10.90	10.90	3.30	3.30	3.50	6.30	18.80	0.00	3.40
C	3.30	3.50	0.00	0.00	0.00	0.00	19.40	0.00	11.40
E	11.50	11.50	3.90	4.00	4.10	4.00	18.60	0.70	2.80

	Q2525	Q2528
B	3.40	3.50
C	11.40	11.40
E	2.80	2.90

	Q2801
G	0.00
D	10.30
S	10.40

	Q2802	Q2803	Q931	Q932	Q933
B	0.70	2.90	6.70	5.00	19.20
C	0.00	10.90	18.80	6.10	19.40
E	0.00	2.30	6.10	4.40	-0.70

D - BOARD - TNP2AH056

IC1501	
1	10.80
2	0.00
3	0.00
4	0.00
5	2.40
6	2.40
7	1.40
8	12.00

IC701	
1	0.20
2	5.30
3	4.70
4	0.00
5	1.60
6	0.70
7	9.50
8	12.00

IC7001			
1	0.00	10	19.30
2	0.00	11	0.00
3	-19.40	12	-20.50
4	-20.50	13	0.00
5	19.30	14	0.00
6	-0.30	15	-0.20
7	-0.30	16	-0.20
8	-20.40	17	-20.50
9	-0.30	18	0.00

↓IC801	
1	1.40
2	0.40
3	0.00
4	0.00
5	0.00
6	5.70
7	20.50
8	0.00
9	6.00

IC811	
1	19.50
2	18.50
3 ↓	0.00
4 ↓	5.90

IC451	
1	0.00
2	17.30
3	-17.00
4	-18.50
5	-0.10
6	17.10
7	0.00

IC7002			
1	0.00	10	19.30
2	0.00	11	-0.40
3	-19.40	12	-0.40
4	-20.50	13	0.20
5	19.30	14	0.00
6	-0.10	15	-0.20
7	-0.10	16	-0.00
8	-20.40	17	-20.50
9	-0.10	18	0.00

IC802	
1	139.40
2	18.50
3	0.00

IC805	
1	19.70
2	0.00
3	12.00

	Q1503	Q1504	Q1505	Q406
B	9.80	12.00	6.10	-0.70
C	6.20	404.80	10.40	0.00
E	10.40	11.40	6.60	0.00

	Q501
G	5.30
D	16.50
S	0.00

	Q509	Q510	Q512
B	29.10	31.60	4.40
C	138.90	138.90	8.30
E	31.60	31.10	3.80

	Q513	Q551	Q606
B	0.30	-0.20	0.00
C	5.30	-98.90	9.80
E	0.00	0.00	0.00

	Q701
G	9.50
D	27.00
S	0.00

	Q7006	Q7007	Q7060	Q7061
B	-20.50	-20.50	19.30	-20.50
C	-19.40	-19.40	0.00	19.30
E	-20.50	-20.50	19.50	-20.70

	Q801
G	5.50
S	0.01
D	43.30

	Q802	Q803	Q854
B	0.70	20.50	138.90
C	0.20	0.00	0.00
E	0.00	20.50	139.20

LR - BOARD - TNPAA145AB

	Q301	Q302	Q303	Q353	Q354	Q355	Q901
B	0.00	0.60	0.60	12.00	176.30	175.00	137.90
C	215.00	0.00	0.00	174.70	218.30	0.00	130.10
E	0.00	0.00	0.00	11.50	175.90	175.60	138.50

	Q903	Q904	Q905	Q906	Q907	Q957	Q958
B	0.10	1.00	0.10	0.70	0.00	129.40	9.43
C	0.00	8.90	19.30	19.30	0.00	69.60	69.60
E	0.80	0.30	0.00	0.40	0.40	130.00	8.86

LG - BOARD - TNPAA146AB

IC880	
1	19.30
2	0.00
3	12.00

	Q331	Q373	Q374	Q375	Q934	Q935	Q936	Q937
B	4.10	12.00	172.10	171.00	0.00	0.00	0.70	0.00
C	11.60	170.70	218.80	0.40	0.00	19.30	19.30	0.00
E	3.80	11.60	171.60	171.60	0.70	0.00	0.40	0.40

	Q938	Q941	Q951	Q952	Q953	Q955	Q956
B	137.90	1.00	-0.90	-1.10	-1.10	129.70	9.60
C	130.10	9.00	19.30	19.30	19.30	70.00	70.00
E	138.60	0.30	0.00	0.00	0.00	130.10	9.00

LB - BOARD - TNPAA147AB

	Q361	Q362	Q363	Q364	Q365	Q366	Q368	Q393	Q394
B	5.20	4.50	3.90	3.90	5.90	5.10	0.00	12.00	176.10
C	12.00	12.00	11.50	0.00	12.00	12.00	0.00	174.80	218.00
E	4.50	3.90	3.70	3.50	5.30	4.50	0.40	11.60	175.70

	Q395	Q959	Q960	Q961	Q964	Q965	Q966	Q967	Q968
B	174.60	129.40	9.60	137.90	1.00	0.00	0.00	0.70	0.00
C	0.40	71.00	71.00	130.00	9.00	0.00	19.30	19.30	0.00
E	175.40	130.00	9.10	138.50	0.40	0.70	0.00	0.40	0.40

T - BOARD - TNP2AA136

IC2801⏚	
1	. . . . .3.30
2	. . . . .1.90
3	. . . . .0.00
4	. . . .15.70
5	. . . . -8.20

IC2803		
1	K	. . . 8.20
2	R	. . . 2.40
3	A	. . . 0.00

IC2804	
1	. . . . . 9.20
2	. . . . . 8.20
3	⏚. . . . 0.00
4	⏚. . . . 1.90

Connector Voltages For Non-serviceable Boards

DC - BOARD - TNP2AA151

D21--DC1	
1	0.00
2	4.90
3	4.90
4	0.00
5	4.90
6	0.50
7	0.00
8	0.50
9	0.10
10	5.00

D22--DC2	
1	0.00
2	-0.10
3	-0.30
4	-0.10
5	-0.30
6	-0.10
7	-0.30
8	0.00
9	0.00
10	-20.10

D23--DC3	
1	19.50
2	0.00
3	0.00
4	0.00
5	0.00
6	0.00
7	4.80
8	4.80
9	0.00
10	1.40

DV - BOARD - TNP2AA133

A51--DV1			
1	0.00	14	2.10
2	2.50	15	0.00
3	0.00	16	2.50
4	2.50	17	0.00
5	0.00	18	3.30
6	5.00	19	3.30
7	5.00	20	3.30
8	0.00	21	0.00
9	8.90	22	2.90
10	8.90	23	4.20
11	0.00	24	4.80
12	2.10	25	4.80
13	0.00		

JG - BOARD - TNP2AA140

JG3--DG7			
1	0.00	8	3.00
2	0.00	9	0.00
3	3.30	10	3.30
4	0.00	11	3.30
5	0.70	12	0.00
6	0.00	13	8.80
7	0.50	14	4.90

DG - BOARD - TNP2AA132

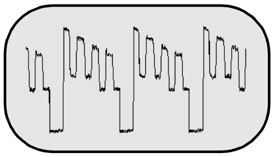
A31--DG1							
1	2.10	18	0.00	35	0.50	52	2.50
2	0.00	19	0.00	36	8.90	53	0.30
3	0.00	20	0.00	37	8.90	54	5.00
4	3.40	21	0.00	38	0.30	55	3.00
5	1.40	22	5.00	39	0.50	56	0.00
6	0.00	23	5.00	40	0.00	57	3.30
7	0.10	24	0.00	41	7.80	58	0.00
8	3.10	25	0.00	42	0.00	59	0.00
9	4.80	26	2.70	43	0.00	60	0.00
10	0.00	27	0.00	44	0.00	61	3.30
11	4.80	28	0.00	45	2.60	62	2.80
12	3.40	29	0.10	46	2.50	63	3.20
13	0.00	30	0.70	47	1.80	64	4.80
14	0.00	31	0.50	48	2.50	65	4.90
15	0.00	32	0.70	49	0.30		
16	1.70	33	0.00	50	2.50		
17	0.00	34	0.70	51	0.00		

A32--DG2							
1	1.50	14	2.10	27	3.80	40	2.20
2	2.10	15	0.00	28	1.10	41	0.00
3	5.00	16	0.00	29	3.80	42	2.20
4	1.50	17	0.00	30	0.80	43	8.90
5	0.10	18	2.20	31	4.20	44	8.90
6	2.60	19	0.00	32	4.90	45	5.00
7	0.00	20	2.20	33	4.80	46	5.00
8	2.30	21	0.00	34	2.90	47	0.00
9	-0.10	22	3.80	35	3.30	48	2.50
10	3.30	23	0.00	36	3.30	49	0.00
11	3.00	24	3.80	37	3.30	50	2.50
12	3.30	25	3.30	38	2.60		
13	0.00	26	1.10	39	0.00		

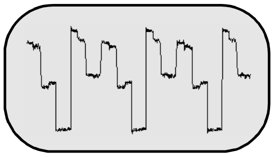
DT - BOARD - TNP2AA144

A41--JK8007 (DT-Board)							
1	0.00	18	1.10	35	3.30	52	10.00
2	0.80	19	0.30	36	3.00	53	10.00
3	30.10	20	3.80	37	3.30	54	0.00
4	30.00	21	0.00	38	0.00	55	0.00
5	0.00	22	3.80	39	0.00	56	0.00
6	0.00	23	0.00	40	2.40	57	0.00
7	0.00	24	2.20	41	0.00	58	10.00
8	0.00	25	0.70	42	2.60	59	10.00
9	0.00	26	2.20	43	0.00	60	10.00
10	0.80	27	0.70	44	1.50	61	10.00
11	0.00	28	0.00	45	0.00	62	0.00
12	1.10	29	0.70	46	4.80	63	0.00
13	0.00	30	0.00	47	0.00	64	7.80
14	1.10	31	3.30	48	4.80	65	0.00
15	0.00	32	0.00	49	0.00		
16	0.80	33	3.30	50	10.00		
17	3.30	34	2.10	51	10.00		

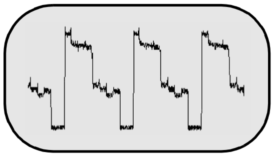
A-Board TNP2AH051



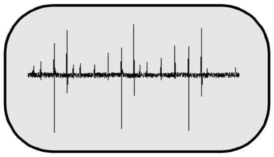
① **6.08 Vp-p**
A15 PIN 2 (BLUE OUT)



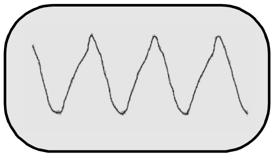
② **5.60 Vp-p**
A15 PIN 4 (RED OUT)



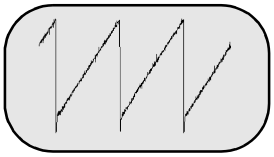
③ **6.08 Vp-p**
A15 PIN 6 (GREEN OUT)



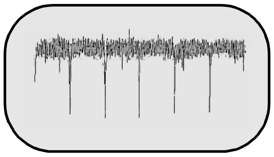
④ **2.74 Vp-p**
A15 PIN 9 (VM OUT)



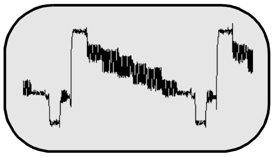
⑤ **5.84 Vp-p**
A15 PIN 11 (S-ABL)



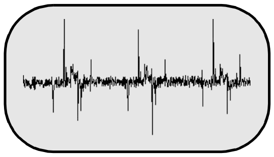
⑥ **2.04 Vp-p**
A4 PIN 1 (V-SAW)



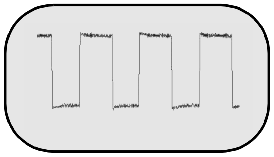
⑦ **.292 Vp-p**
A4 PIN 4 (EHT ADJ)



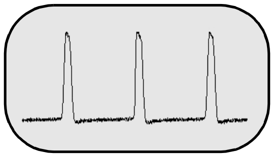
⑧ **1.08 Vp-p**
A32 PIN 14 (MAIN VIDEO)



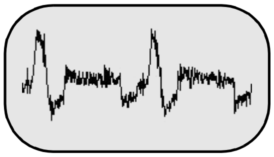
⑨ **0.26 Vp-p**
A2 PIN 1 (HD/SD)



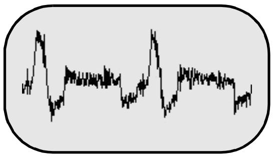
⑩ **3.56Vp-p**
A2 PIN 3 (H-DRV)



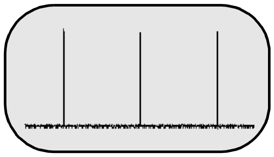
⑪ **5.65 Vp-p**
A2 PIN 5 (FBP)



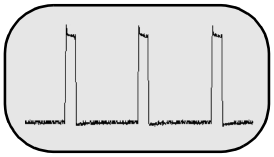
⑫ **0.178 Vp-p**
A2 PIN 11 (SOS3 CONV)



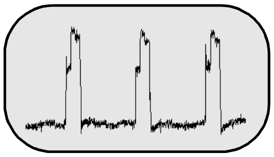
⑬ **0.176 Vp-p**
A2 PIN 15 (SOS)



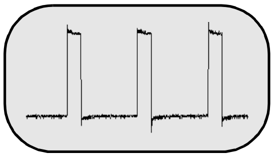
⑭ **3.36 Vp-p**
A3 PIN 9 (VD TO CONV)



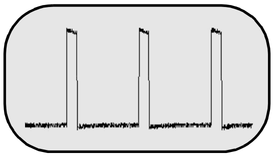
⑮ **3.36 Vp-p**
A3 PIN 11 (HD TO CONV)



⑯ **0.472 Vp-p**
A3 PIN 13 (H-SYNC)

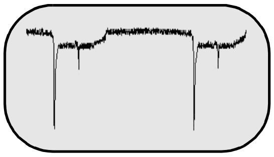


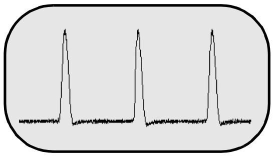
⑰ **3.52 Vp-p**
A3 PIN 15 (HBLK)

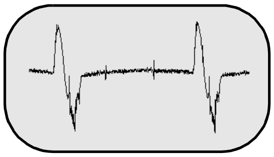


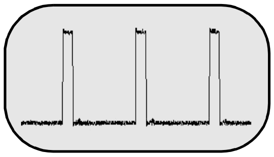
⑱ **3.6 Vp-p**
A3 PIN 16 (EW)

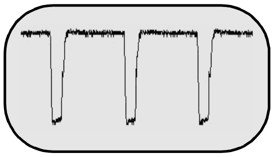
D-Board TNP2AH056

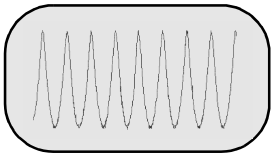

⑲ **12.6 Vp-p**
Q551-B

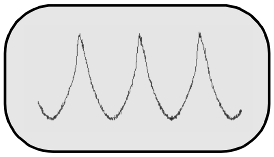

⑳ **1.56 kVp-p**
Q551-C

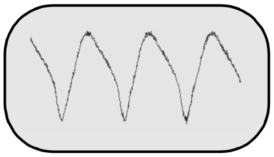

㉑ **0.65 Vp-p**
IC701 PIN 3

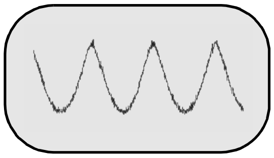

㉒ **3.60Vp-p**
IC701 PIN 6

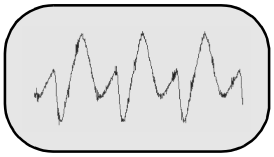

㉓ **13.4 Vp-p**
IC701 PIN 7

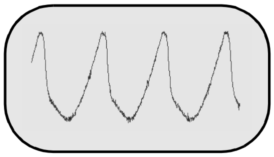

㉔ **2.28 Vp-p**
D23 PIN 10 (DAF)

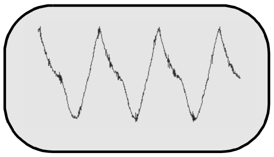

㉕ **2.02 Vp-p**
D22 PIN 2 (BV)


㉖ **2.04 Vp-p**
D22 PIN 3 (BH)

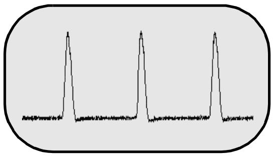

㉗ **1.44 Vp-p**
D22 PIN 4 (GV)

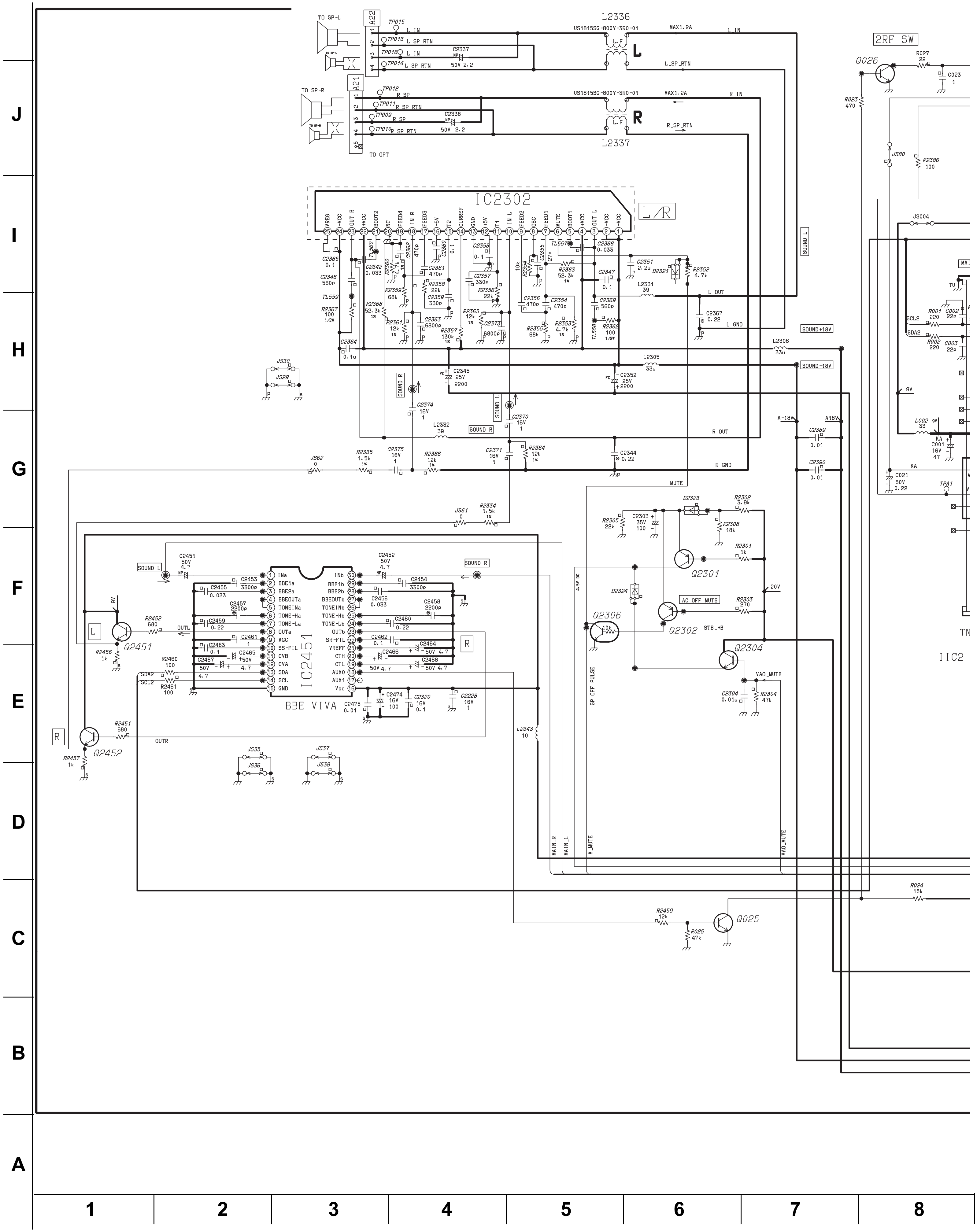

㉘ **.824 Vp-p**
D22 PIN 5 (GH)


㉙ **1.94 Vp-p**
D22 PIN 6 (RV)


㉚ **1.17 Vp-p**
D22 PIN 7 (RH)

LG-Board TNP2AA146


㉛ **28.4 Vp-p**
TP22 (HEATER)



J
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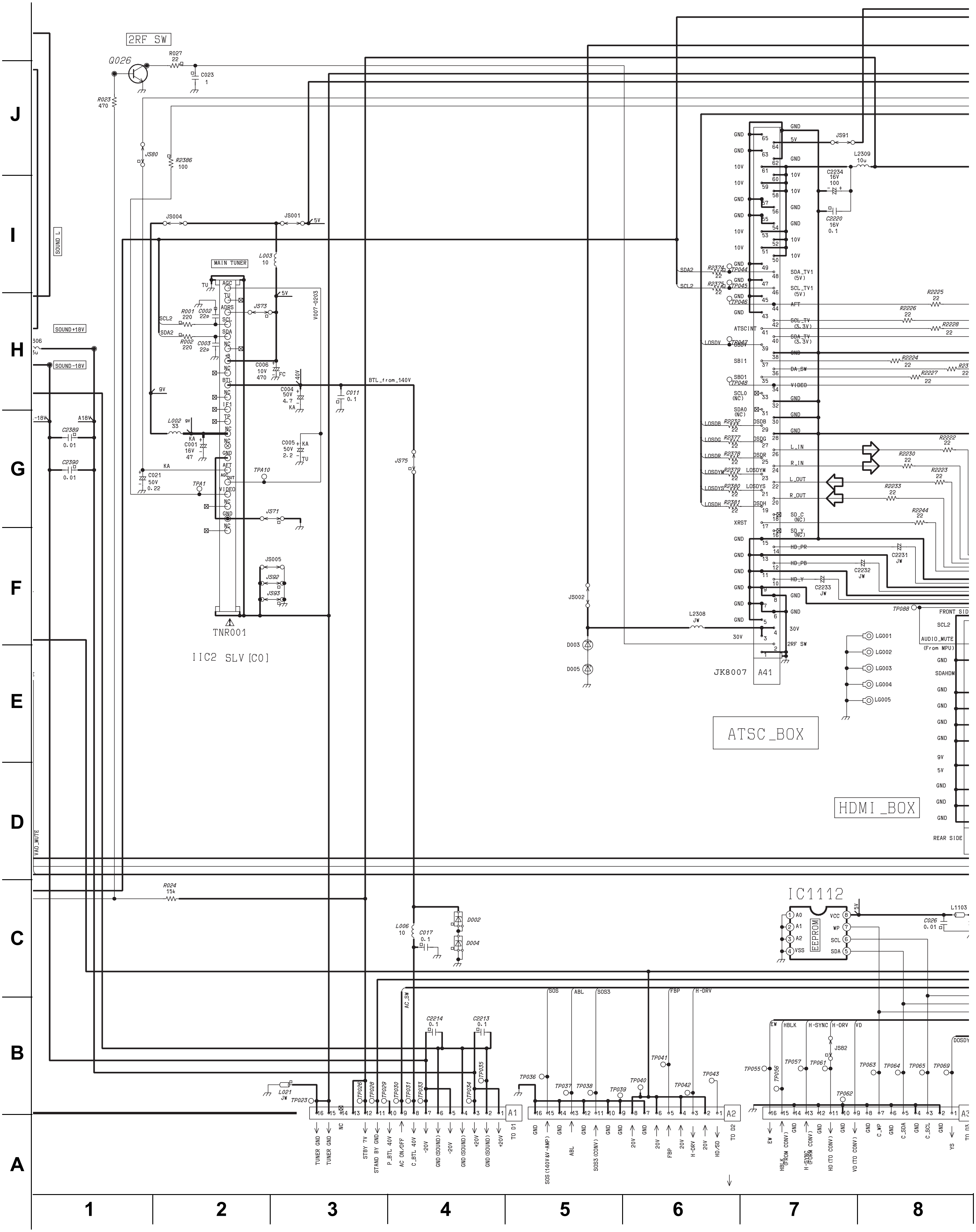
8
TO SP-L
A22
TP015
L IN
TP013
L SP RTN
TP016
L IN
TP014
L SP RTN
C2337
50V 2.2
TO SP-R
A21
TP012
R SP
TP011
R SP RTN
TP009
R SP
TP010
R SP RTN
C2338
50V 2.2
TO OPT
L2336
US1815SG-800Y-3R0-01
MAX1.2A
L IN
L SP RTN
L2337
R IN
R SP RTN
2RF SW
Q026
R027
22
C023
1
R023
470
JS80
R2386
100
IC2302
L/R
VREG
-VCC
OUT R
+VCC
BOOT2
NC
FEED4
IN R
FEED3
-5V
T2
CURREF
GND
+5V
T1
IN L
FEED2
OSC
FEED1
MUTE
BOOT1
+VCC
OUT L
-VCC
-VCC
SOUND L
JS004
C2365
C2342
C2346
TL559
C2367
L2331
39
L OUT
L GND
SOUND +18V
L2306
33u
L2305
33u
SOUND -18V
C2345
25V 2200
C2352
25V 2200
SOUND R
C2374
16V 1
L2332
39
C2370
16V 1
R OUT
C2344
0.22
R GND
A-18V
A18V
C2389
0.01
C2390
0.01
JS62
R2335
1.5k
C2375
16V 1
R2366
12k
C2371
R2364
12k
MUTE
JS61
R2334
1.5k
D2323
R2302
3.9k
C2303
35V 100
R2305
22k
R2308
18k
R2301
1k
Q2301
D2324
20V
AC OFF MUTE
R2303
270
Q2306
Q2302
STB_+B
Q2304
VAO_MUTE
C2304
0.01u
R2304
47k
SP OFF PULSE
4.5V DC
IC2451
BBE VIVA
SOUND L
SOUND R
C2451
50V 4.7
C2452
50V 4.7
INa
BBE1a
BBE2a
BBEOUTa
TONEINa
TONE-Ha
TONE-La
OUTa
AGC
SS-FIL
CVB
CVA
SDA
SCL
GND
INb
BBE1b
BBE2b
BBEOUTb
TONEINb
TONE-Hb
TONE-Lb
OUTb
SR-FIL
VREFF
CTH
CTL
AUX0
AUX1
Vcc
Q2451
R2452
680
OUTL
R2456
1k
Q2452
R2451
680
OUTR
R2457
1k
R2460
100
R2461
100
SDA2
SCL2
C2475
0.01
C2474
16V 100
C2320
16V 0.1
C2228
16V 1
L2343
10
JS35
JS36
JS37
JS38
JS30
JS29
MAIN_R
MAIN_L
A_MUTE
VAO_MUTE
R2459
12k
R025
47k
Q025
R024
15k
R001
220
C002
22p
R002
220
C003
22p
SCL2
SDA2
9V
L002
33
C001
16V 47
C021
50V 0.22
TPA1
KA
IIC2


2RF SW
Q026
R027 22
C023 1
R023 470
JS80
R2386 100
SOUND L
SOUND+18V
SOUND-18V
JS004
JS001
5V
L003 10
MAIN TUNER
AGC
TU
ADRS
SCL
SDA
NC
+B
BTL
IF1
TP
GND
AFT
VIDEO
JS73
R001 220
C002 22p
R002 220
C003 22p
SCL2
SDA2
C006 10V 470
C004 50V 4.7
C011 0.1
BTL_from_140V
9V
L002 33
C001 16V 47
C005 50V 2.2
C021 50V 0.22
KA
TPA10
TPA1
JS71
JS75
JS005
JS92
JS93
V007-0203
TNR001
IIC2 SLV [C0]
-18V
A18V
C2389 0.01
C2390 0.01
VAO_MUTE
R024 15k
L006 10
C017 0.1
D002
D004
AC_SW
C2214 0.1
C2213 0.1
L021 JW
TP023
TP026
TP028
TP029
TP030
TP031
TP033
TP034
TP035
A1
TUNER GND
NC
STBY 7V
STAND BY GND
P_BTL 40V
AC ON/OFF
C_BTL 40V
-20V
GND (SOUND)
+20V
TO D1
SOS
ABL
SOS3
FBP
H-DRV
TP036
TP037
TP038
TP039
TP040
TP041
TP042
TP043
A2
SOS (140V&V-AMP)
SOS3 (CONV)
20V
HD/SD
TO D2
EW
HBLK
H-SYNC
VD
JS82
TP055
TP056
TP057
TP061
TP062
TP063
TP064
TP065
TP069
A3
HBLK (FROM CONV)
H-SYNC (FORM CONV)
HD (TO CONV)
VD (TO CONV)
C_WP
C_SDA
C_SCL
YS
DOSDY
IC1112
EEPROM
A0
A1
A2
VSS
VCC
WP
SCL
SDA
L1103
C026 0.01
JS91
L2309 10u
C2234 16V 100
C2220 16V 0.1
10V
SDA2
SCL2
R2374 22
R2375 22
TP044
TP045
TP046
TP047
TP048
SDA_TV1 (5V)
SCL_TV1 (5V)
AFT
ATSCINT
SCL_TV (3.3V)
SDA_TV (3.3V)
LOSDV
OSDV
SBI1
SB01
DA_SW
VIDEO
SCL0 (NC)
SDA0 (NC)
LOSDB
LOSDG
LOSDR
LOSDYM
LOSDYS
LOSDH
R2232 22
R2377 22
R2378 22
R2379 22
R2380 22
R2381 22
OSDB
OSDG
OSDR
L_IN
R_IN
L_OUT
R_OUT
XRST
SD_C (NC)
SD_Y (NC)
HD_PR
HD_PB
HD_Y
C2231 JW
C2232 JW
C2233 JW
R2225 22
R2226 22
R2228 22
R2224 22
R2227 22
R2222 22
R2230 22
R2223 22
R2233 22
R2244 22
30V
2RF SW
L2308 JW
JS002
D003
D005
JK8007
A41
LG001
LG002
LG003
LG004
LG005
ATSC_BOX
TP088
FRONT SIDE
AUDIO_MUTE (From MPU)
SDAHDM
HDMI_BOX
REAR SIDE
J
I
H
G
F
E
D
C
B
A
1
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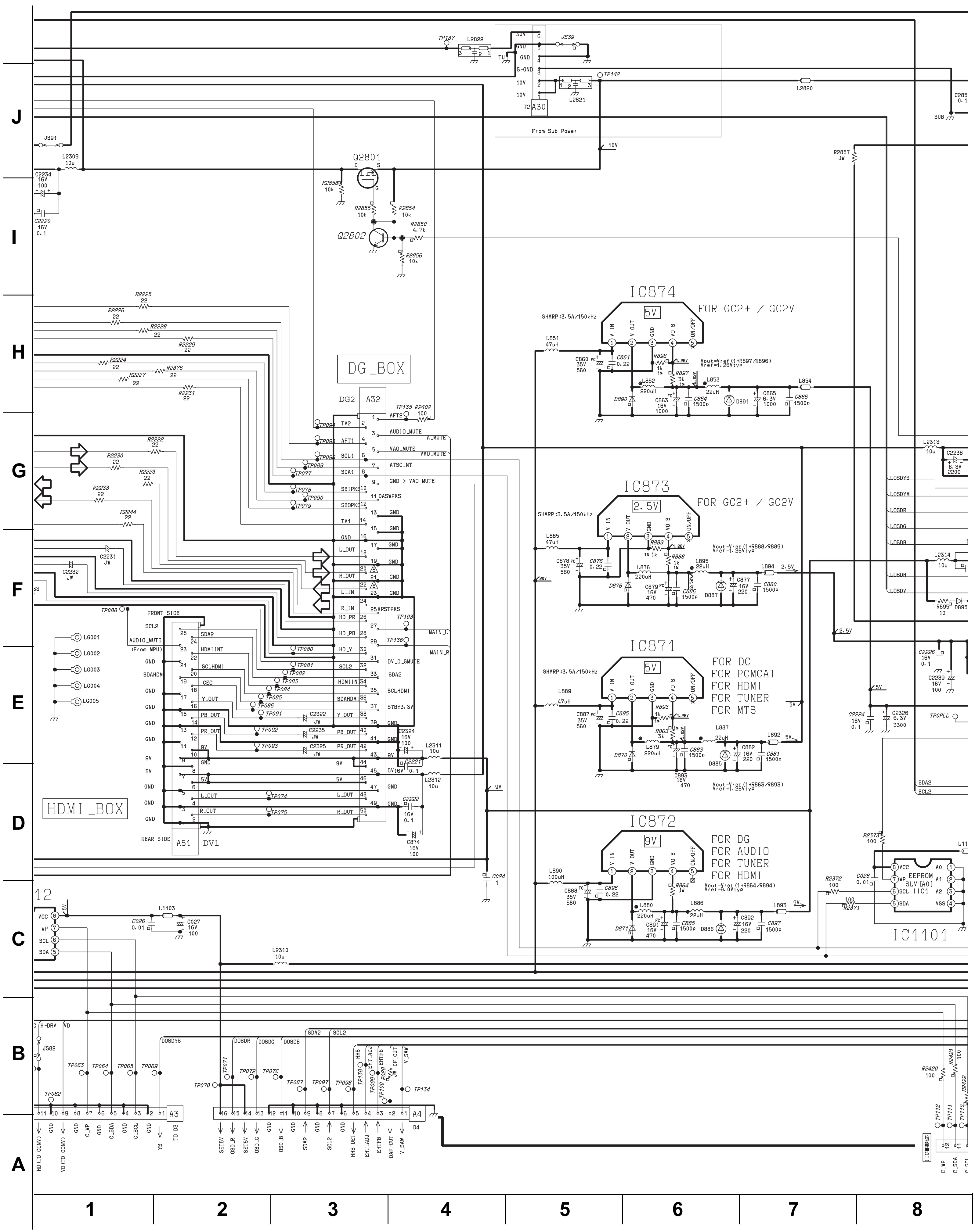

J
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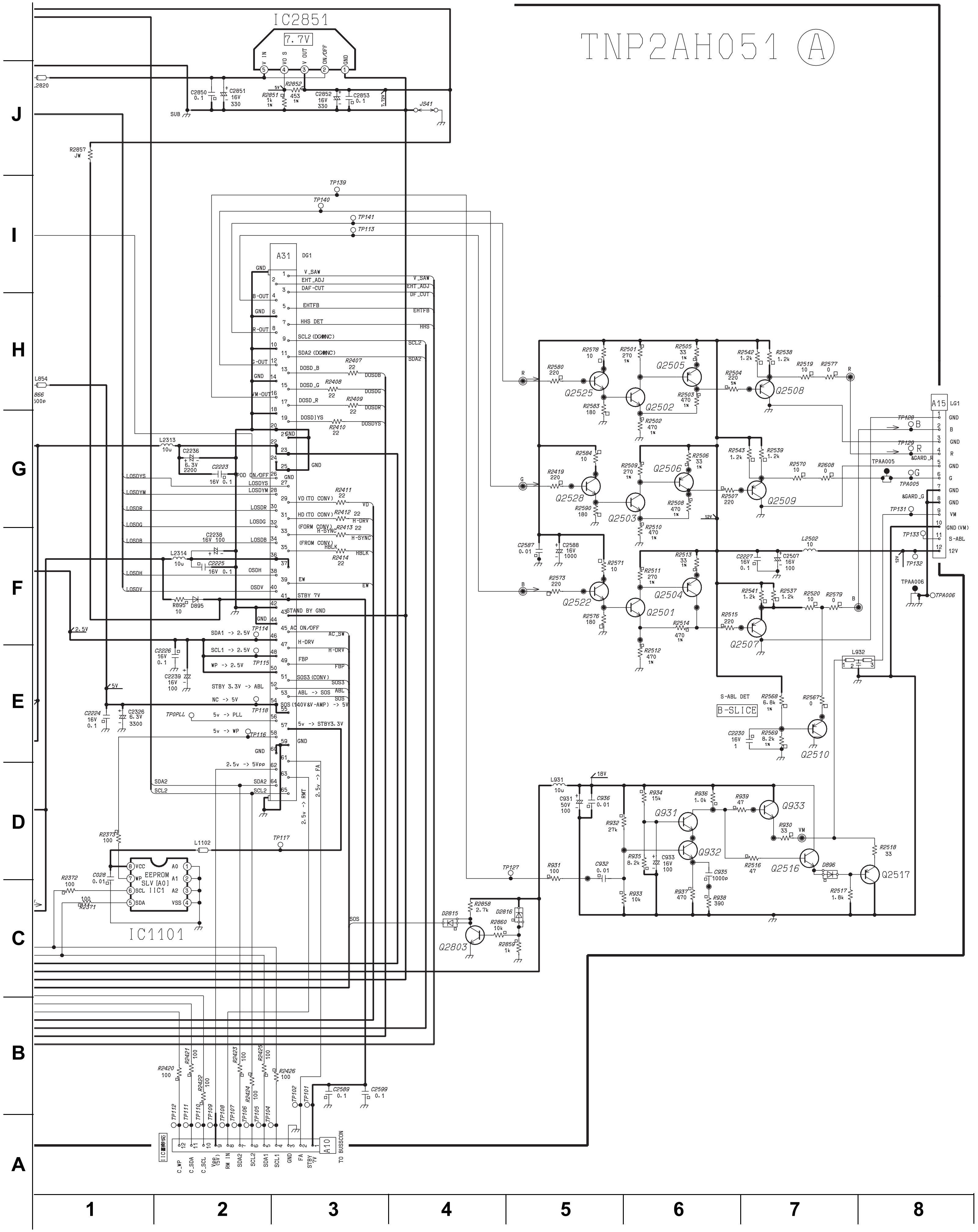
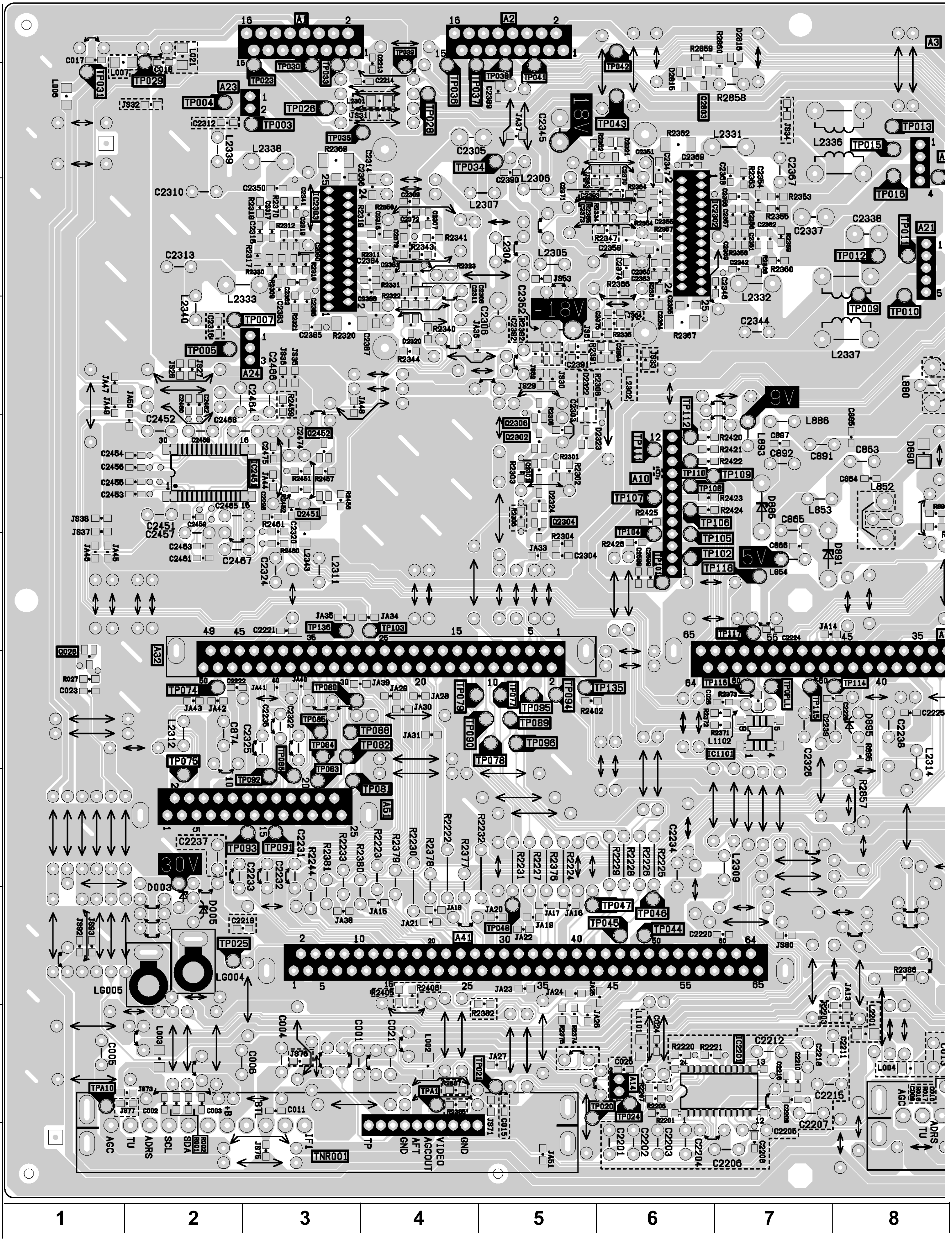
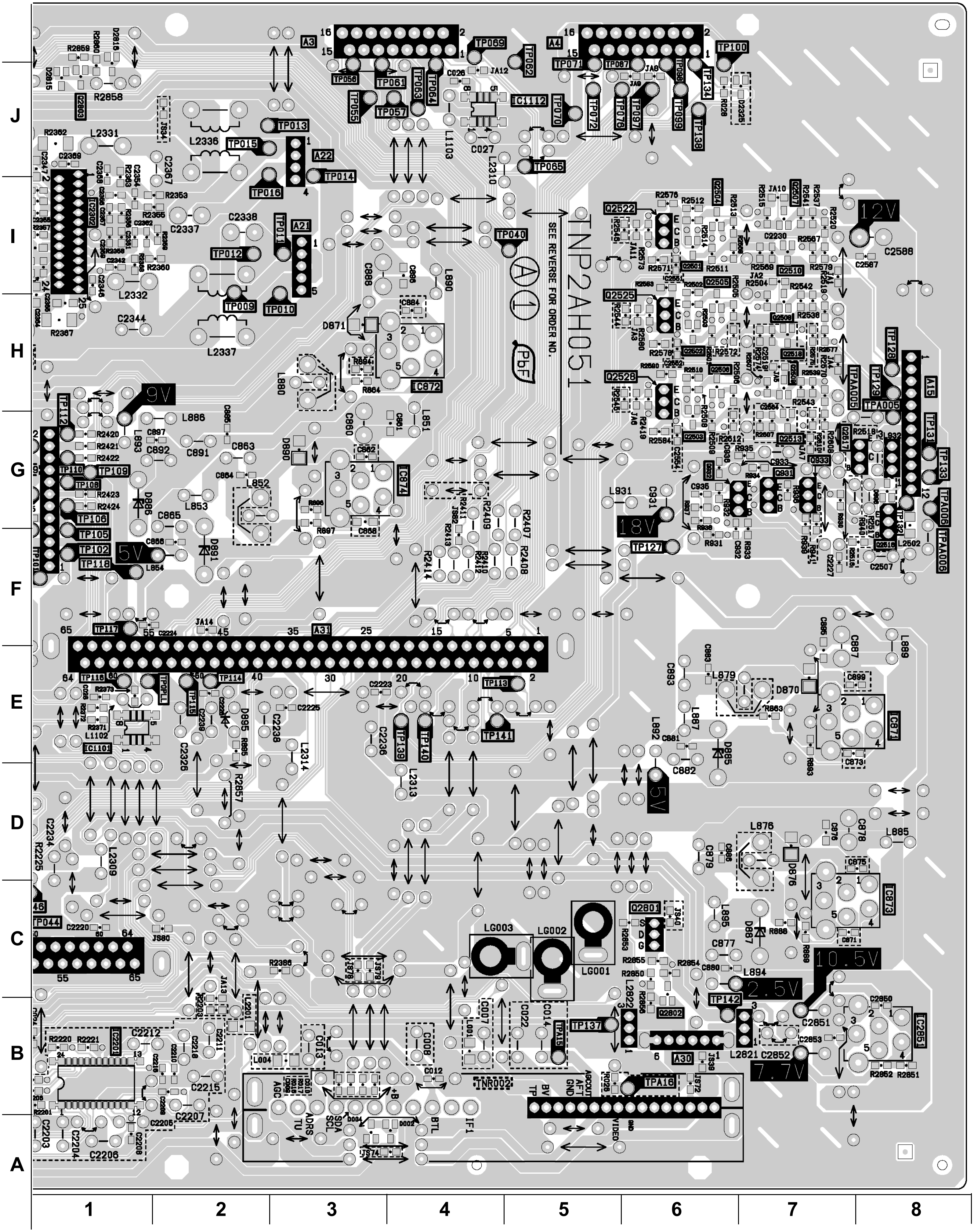
From Sub Power
A30
T2
30V
GND
S-GND
10V
TU
L2822
L2821
L2820
TP137
TP142
JS39
SUB
JS91
L2309
10u
C2234
C2220
Q2801
Q2802
R2853
R2855
R2854
R2850
R2856
R2857
JW
DG_BOX
DG2
A32
TV2
AFT1
SCL1
SDA1
SBIPKS
SBOPKS
TV1
GND
L_OUT
R_OUT
L_IN
R_IN
HD_PR
HD_PB
HD_Y
SCL2
HDMIINT
SDAHDMI
Y_OUT
PB_OUT
PR_OUT
AFT2
AUDIO_MUTE
VAO_MUTE
A_MUTE
ATSCINT
GND > VAO MUTE
DASWPKS
XRSTPKS
MAIN_L
MAIN_R
DV_D_SMUTE
SDA2
SCLHDMI
STBY3.3V
HDMI_BOX
A51
DV1
FRONT SIDE
REAR SIDE
AUDIO_MUTE (From MPU)
CEC
LG001
LG002
LG003
LG004
LG005
IC874
5V
FOR GC2+ / GC2V
SHARP:3.5A/150kHz
V IN
V OUT
GND
VO S
ON/OFF
Vout=Vref(1+R897/R896)
Vref=1.26Vtyp
IC873
2.5V
FOR GC2+ / GC2V
Vout=Vref(1+R888/R889)
Vref=1.26Vtyp
IC871
5V
FOR DC
FOR PCMCAI
FOR HDMI
FOR TUNER
FOR MTS
Vout=Vref(1+R863/R893)
Vref=1.26Vtyp
IC872
9V
FOR DG
FOR AUDIO
FOR TUNER
FOR HDMI
Vout=Vref(1+R864/R894)
Vref=9.0Vtyp
EEPROM
SLV [A0]
IIC1
IC1101
VCC
WP
SCL
SDA
A0
A1
A2
VSS
L2313
L2314
C2236
C2226
C2239
C2224
C2326
TP0PLL
LOSDYS
LOSDYM
LOSDR
LOSDG
LOSDB
LOSDH
LOSDV
L2310
L1103
C026
C027
A3
A4
D4
HD (TO CONV)
VD (TO CONV)
C_WP
C_SDA
C_SCL
YS
TO D3
SET5V
OSD_R
OSD_G
OSD_B
HHS DET
EHT_ADJ
EHTFB
DAF-OUT
V_SAW
DOSDYS
DOSDR
DOSDG
DOSDB
H-DRV
JS82


TNP2AH051 Ⓐ
IC2851
7.7V
V IN
VO S
V OUT
ON/OFF
GND
C2850 0.1
C2851 16V 330
R2851 1k 1%
R2852 453 1%
C2852 16V 330
C2853 0.1
JS41
SUB
R2857 JW
TP139
TP140
TP141
TP113
A31
DG1
V_SAW
EHT_ADJ
DAF-CUT
EHTFB
HHS DET
SCL2 (DGCONC)
SDA2 (DGCONC)
DOSD_B
DOSD_G
DOSD_R
DOSDIYS
B-OUT
R-OUT
G-OUT
VM-OUT
GND
R2407 22
R2408 22
R2409 22
R2410 22
L2313 10u
C2236 6.3V 2200
C2223 16V 0.1
OSD ON/OFF
LOSDYS
LOSDYM
LOSDR
LOSDG
LOSDB
LOSDH
LOSDV
VD (TO CONV)
HD (TO CONV)
(FORM CONV) H-SYNC
(FROM CONV) HBLK
R2411 22
R2412 22
R2413 22
R2414 22
C2238 16V 100
L2314 10u
C2225 16V 0.1
OSDH
OSDV
EW
STBY 7V
STAND BY GND
R895 10
D895
2.5V
SDA1 -> 2.5V
SCL1 -> 2.5V
WP -> 2.5V
STBY 3.3V -> ABL
NC -> 5V
5v -> PLL
5v -> WP
2.5v -> 5Vpp
TP114
TP115
TP116
TP118
TP0PLL
AC ON/OFF
AC_SW
H-DRV
FBP
SOS3 (CONV)
ABL -> SOS
SOS (140V&V-AMP) -> 5V
5v -> STBY3.3V
2.5v -> RMT
2.5v -> FA
C2226 16V 0.1
C2239 16V 100
C2224 16V 0.1
C2326 6.3V 3300
5V
SDA2
SCL2
R2373 100
L1102
TP117
EEPROM SLV [A0] IIC1
VCC
WP
SCL
SDA
A0
A1
A2
VSS
C028 0.01
R2372 100
R2371 100
IC1101
SOS
D2815
Q2803
R2858 2.7k
D2816
R2860 10k
R2859 1k
TP127
R931 100
C932 0.01
L931 10u
C931 50V 100
C936 0.01
18V
R932 27k
R934 15k
R935 8.2k
C933 16V 100
R933 10k
Q931
Q932
R936 1.0k
R937 470
C935 1000p
R938 390
R939 47
Q933
R930 33
VM
R2516 47
Q2516
D896
R2518 33
R2517 1.8k
Q2517
R2580 220
Q2525
R2578 10
R2583 180
R2501 270 1%
Q2502
R2502 470 1%
R2505 33 1%
Q2505
R2503 470 1%
R2542 1.2k
R2538 1.2k
R2504 220 5%
Q2508
R2519 10
R2577 0
R
R2419 220
Q2528
R2584 10
R2590 180
R2509 270 1%
Q2503
R2510 470 1%
R2506 33 1%
Q2506
R2508 470 1%
R2543 1.2k
R2539 1.2k
R2507 220
Q2509
R2570 10
R2608 0
G
C2587 0.01
C2588 16V 1000
R2573 220
Q2522
R2571 10
R2576 180
R2511 270 1%
Q2501
R2512 470 1%
R2513 33 1%
Q2504
R2514 470 1%
R2541 1.2k
R2537 1.2k
R2515 220
Q2507
R2520 10
R2579 0
B
12V
C2227 16V 0.1
C2507 16V 100
L2502 10
S-ABL DET
B-SLICE
R2568 6.8k 1%
R2567 0
C2230 16V 1
R2569 8.2k 1%
Q2510
L932
A15
LG1
TP128
TP129
TP131
TP133
TP132
TPAA005
TPAA006
TPA005
TPA006
GND
B
R
&GARD_R
G
&GARD_G
VM
GND (VM)
S-ABL
12V
R2420 100
R2421 100
R2422 100
R2423 100
R2424 100
R2425 100
R2426 100
C2589 0.1
C2599 0.1
TP112
TP111
TP110
TP109
TP108
TP107
TP106
TP105
TP104
TP102
TP101
A10
TO BUSSCON
C_WP
C_SDA
C_SCL
Vpp (5V)
RM IN
SDA2
SCL2
SDA1
SCL1
GND
FA
STBY 7V
1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J

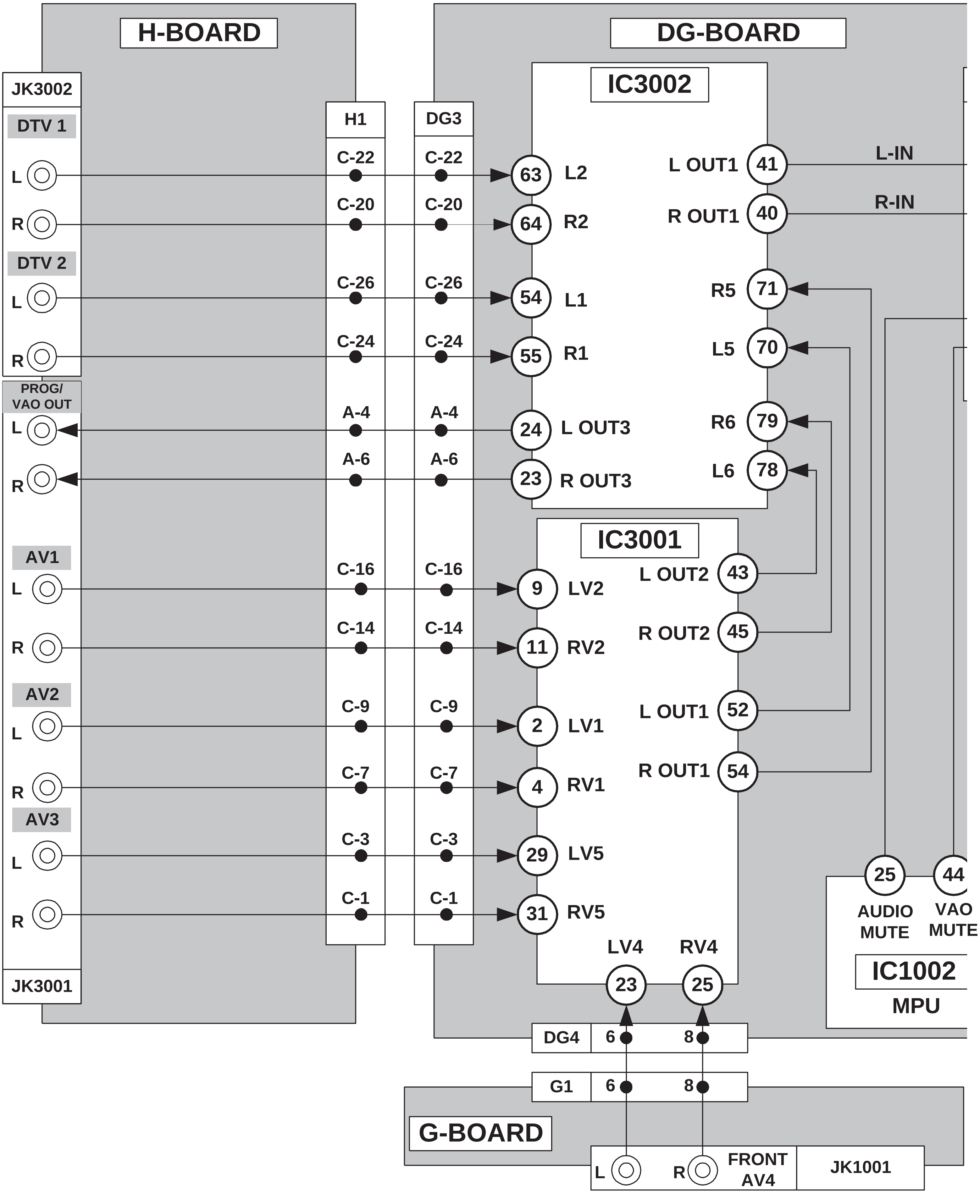

A1
A2
A3
A10
A14
A21
A23
A24
A32
A41
A51
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
18V
-18V
9V
5V
30V
IC2301
IC2302
IC2451
IC2201
IC1101
TP003
TP004
TP005
TP007
TP009
TP010
TP012
TP013
TP015
TP016
TP020
TP021
TP024
TP025
TP026
TP028
TP029
TP030
TP031
TP033
TP034
TP035
TP036
TP037
TP038
TP041
TP042
TP043
TP044
TP045
TP046
TP047
TP048
TP074
TP075
TP078
TP079
TP080
TP081
TP082
TP083
TP084
TP085
TP086
TP088
TP089
TP090
TP091
TP092
TP093
TP094
TP095
TP096
TP101
TP102
TP103
TP104
TP105
TP106
TP107
TP108
TP109
TP110
TP111
TP112
TP114
TP115
TP116
TP117
TP118
TP135
TP136
TPA1
TPA10
TNR001
L2306
L2307
L2304
L2305
L2331
L2332
L2333
L2336
L2337
L2338
L2339
L2340
L2309
L2311
L2312
L2314
L2343
L886
L853
L852
L854
L880
L1102
L003
L004
L002
LG004
LG005
C2305
C2306
C2310
C2313
C2324
C2325
C2326
C2337
C2338
C2344
C2345
C2352
C2367
C2451
C2452
C2457
C2464
C2466
C2467
C2231
C2232
C2233
C2234
C2237
C2238
C2212
C2207
C2215
C2206
C2201
C2202
C2203
C2204
C891
C892
C863
C865
C874
C001
C004
C005
C006
C021
D003
D005
D886
D890
D891
D895
R2320
R2340
R2341
R2344
R2358
R2367
R2220
R2221
R2222
R2223
R2224
R2225
R2226
R2227
R2228
R2229
R2230
R2231
R2232
R2233
R2244
R2376
R2377
R2378
R2379
R2380
R2381
R2857
R2858
R2859
Q2302
Q2304
Q2306
Q2451
Q2452
Q028
AGC
TU
ADRS
SCL
SDA
+B
BTL
IF1
TP
GND
AFT
AGCOUT
VIDEO
GND

A-BOARD 1 of 2 TNP2AH051 PT-47WXD63G / PT-53WXD63G

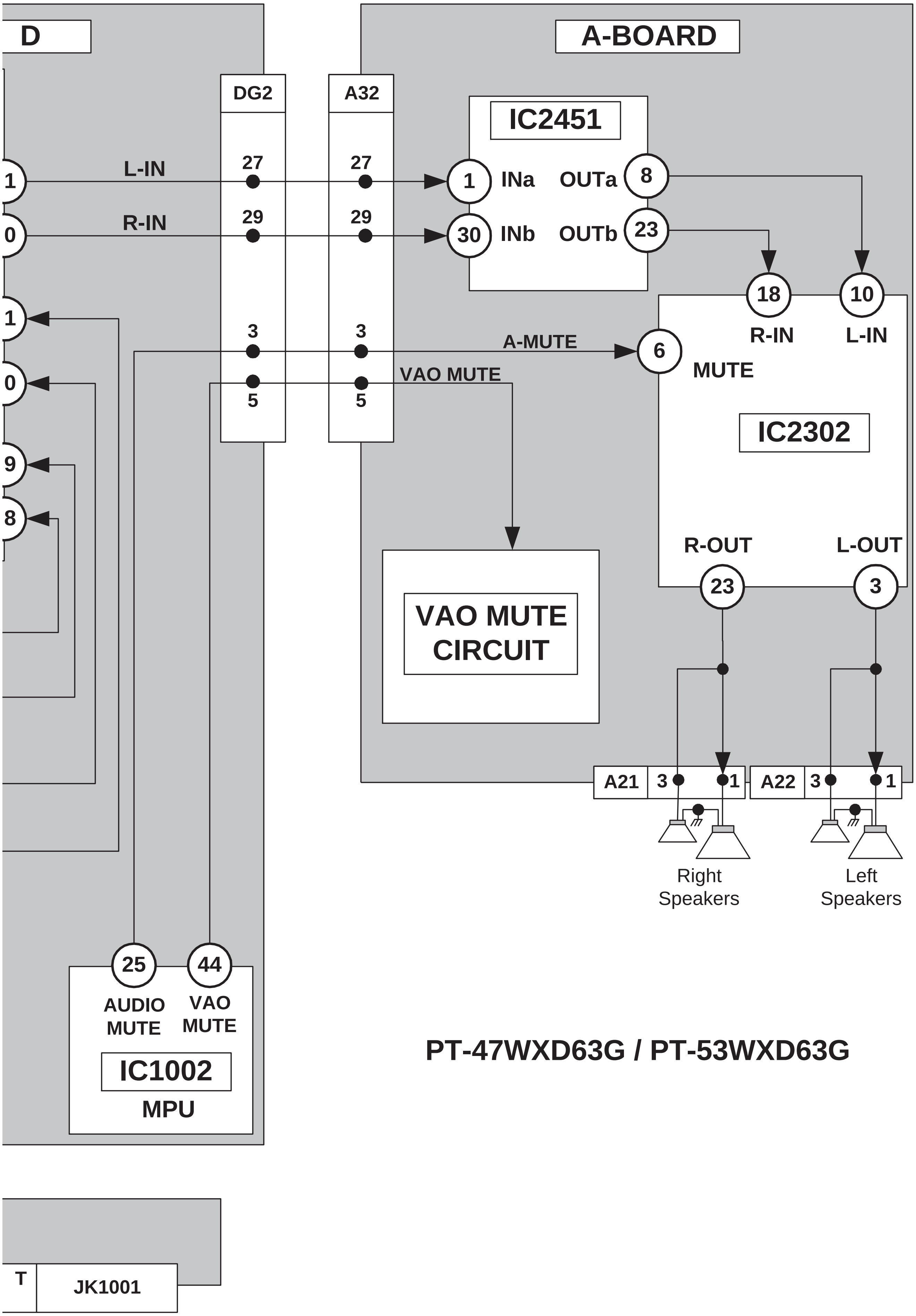

TNP2AH051
SEE REVERSE FOR ORDER NO.
A1
PbF
A3
A4
A15
A21
A22
A30
A31
12V
9V
5V
18V
10.5V
2.5V
7.7V
IC872
IC874
IC871
IC873
IC1101
IC1112
IC2302
IC2851
Q2522
Q2525
Q2528
Q2801
Q2802
LG001
LG002
LG003
TNR002
L2331
L2332
L2336
L2337
L852
L853
L854
L876
L879
L880
L886
L889
L890
L894
L895
L931
L1102
L1103
L2309
L2310
L2313
L2314
L2821
L2822
D870
D871
D876
D885
D886
D887
D890
D891
D895
TP009
TP010
TP011
TP012
TP013
TP014
TP015
TP016
TP040
TP055
TP056
TP057
TP061
TP062
TP063
TP064
TP065
TP069
TP070
TP071
TP072
TP076
TP087
TP097
TP098
TP099
TP100
TP101
TP102
TP105
TP106
TP108
TP109
TP110
TP112
TP113
TP114
TP115
TP116
TP117
TP118
TP127
TP128
TP129
TP131
TP132
TP133
TP134
TP137
TP138
TP139
TP140
TP141
TP142
TPA005
TPAA005
TPAA006
TPA15
TPA16
AGC
ADRS
TU
SCL
SDA
+B
BTL
IF1
TP
BV
GND
AFT
AGCOUT
VIDEO
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8

A-BOARD 2 of 2 TNP2AH051 PT-47WXD63G / PT-53WXD63G

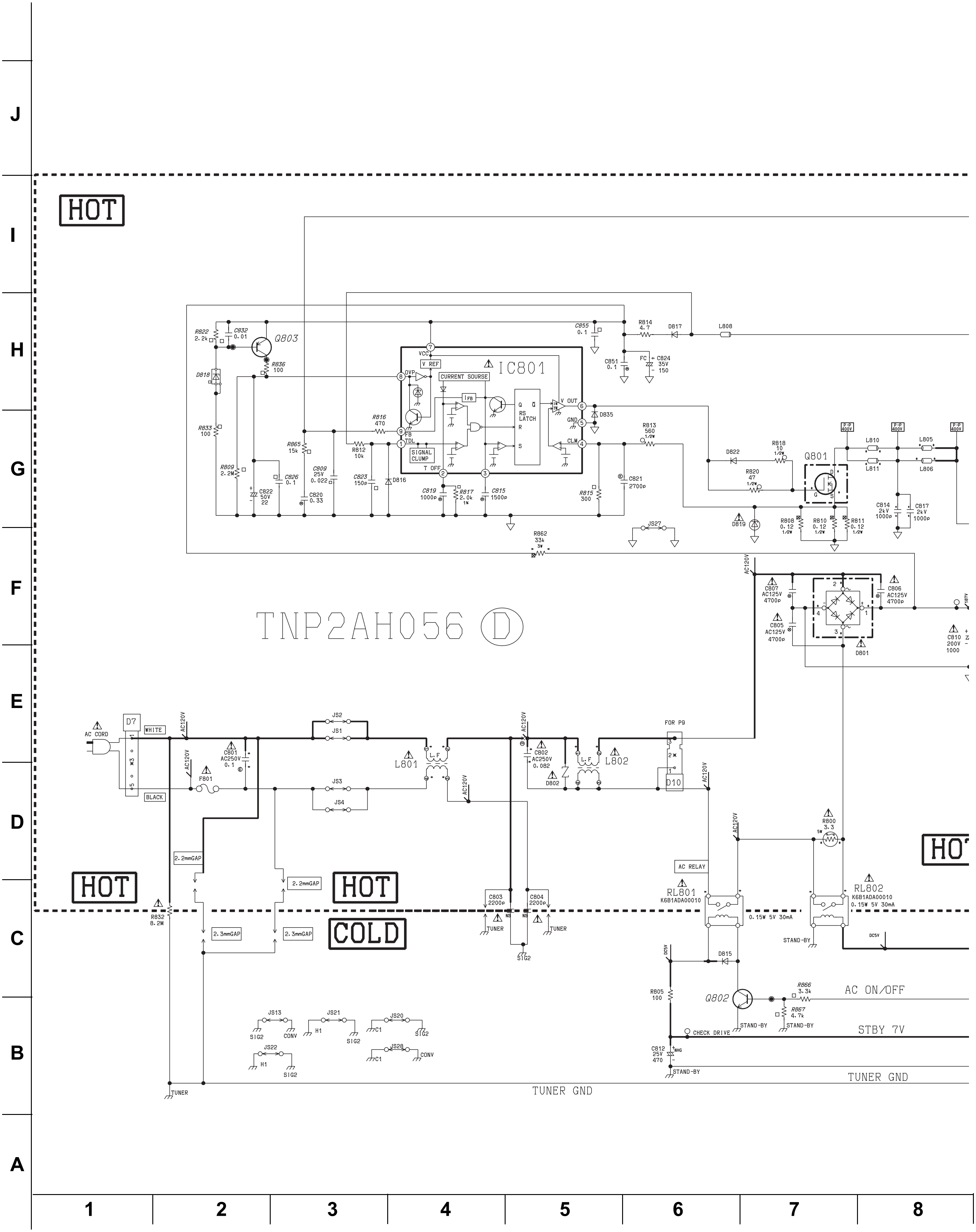
Audio signal path block diagram

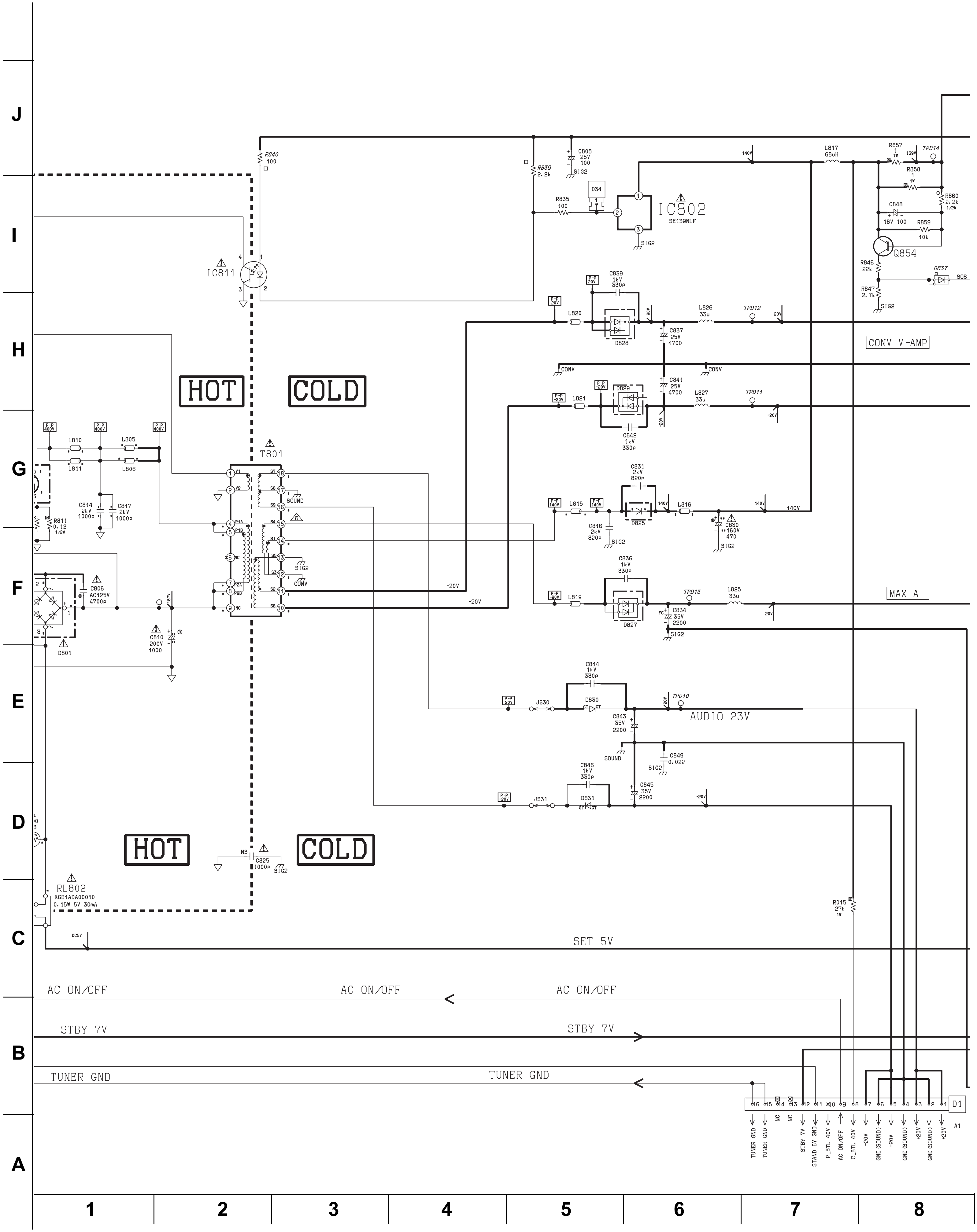

H-BOARD
DG-BOARD
G-BOARD
JK3002
DTV 1
L
R
DTV 2
L
R
PROG/
VAO OUT
L
R
AV1
L
R
AV2
L
R
AV3
L
R
JK3001
H1
DG3
C-22
C-20
C-26
C-24
A-4
A-6
C-16
C-14
C-9
C-7
C-3
C-1
IC3002
63 L2
64 R2
54 L1
55 R1
24 L OUT3
23 R OUT3
L OUT1 41
R OUT1 40
R5 71
L5 70
R6 79
L6 78
L-IN
R-IN
IC3001
9 LV2
11 RV2
2 LV1
4 RV1
29 LV5
31 RV5
L OUT2 43
R OUT2 45
L OUT1 52
R OUT1 54
LV4
RV4
23
25
25
AUDIO
MUTE
44
VAO
MUTE
IC1002
MPU
DG4
6
8
G1
6
8
L
R
FRONT
AV4
JK1001

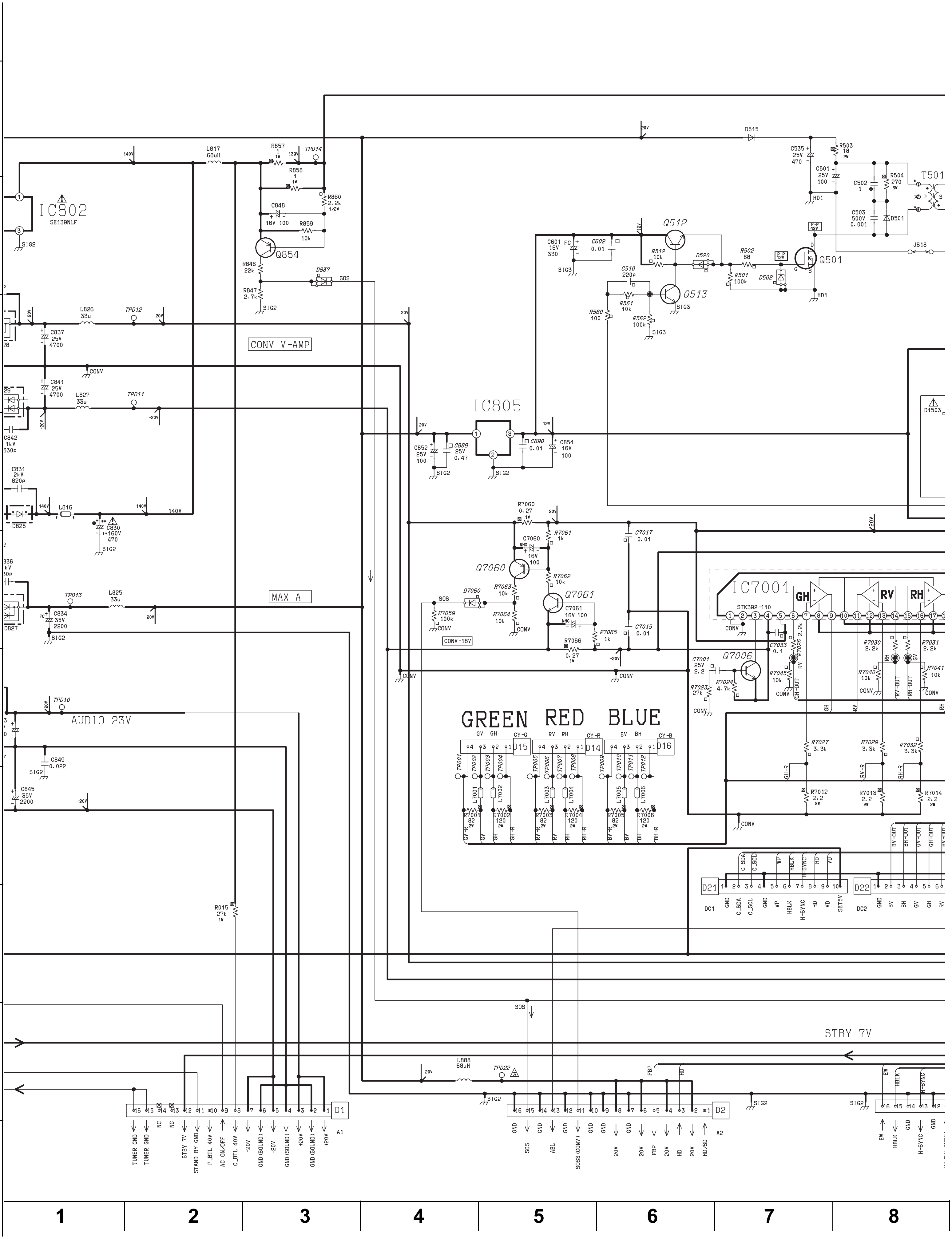
m

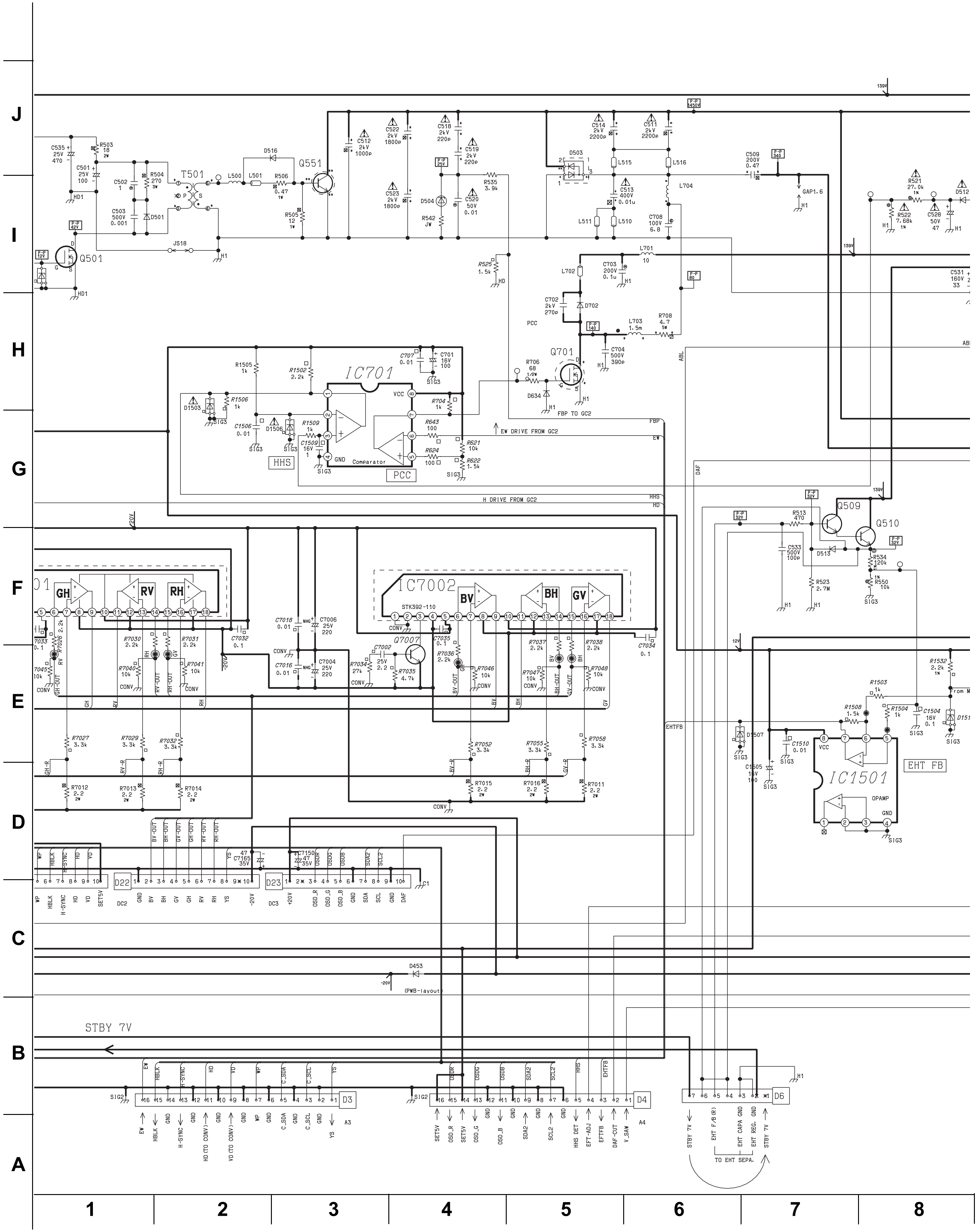

D
DG2
A32
A-BOARD
IC2451
L-IN
R-IN
27
29
1
30
INa
INb
OUTa
OUTb
8
23
18
10
R-IN
L-IN
3
5
A-MUTE
VAO MUTE
6
MUTE
IC2302
R-OUT
L-OUT
23
3
VAO MUTE
CIRCUIT
A21
A22
3
1
Right
Speakers
Left
Speakers
25
44
AUDIO
MUTE
VAO
MUTE
IC1002
MPU
T
JK1001

PT-47WXD63G / PT-53WXD63G

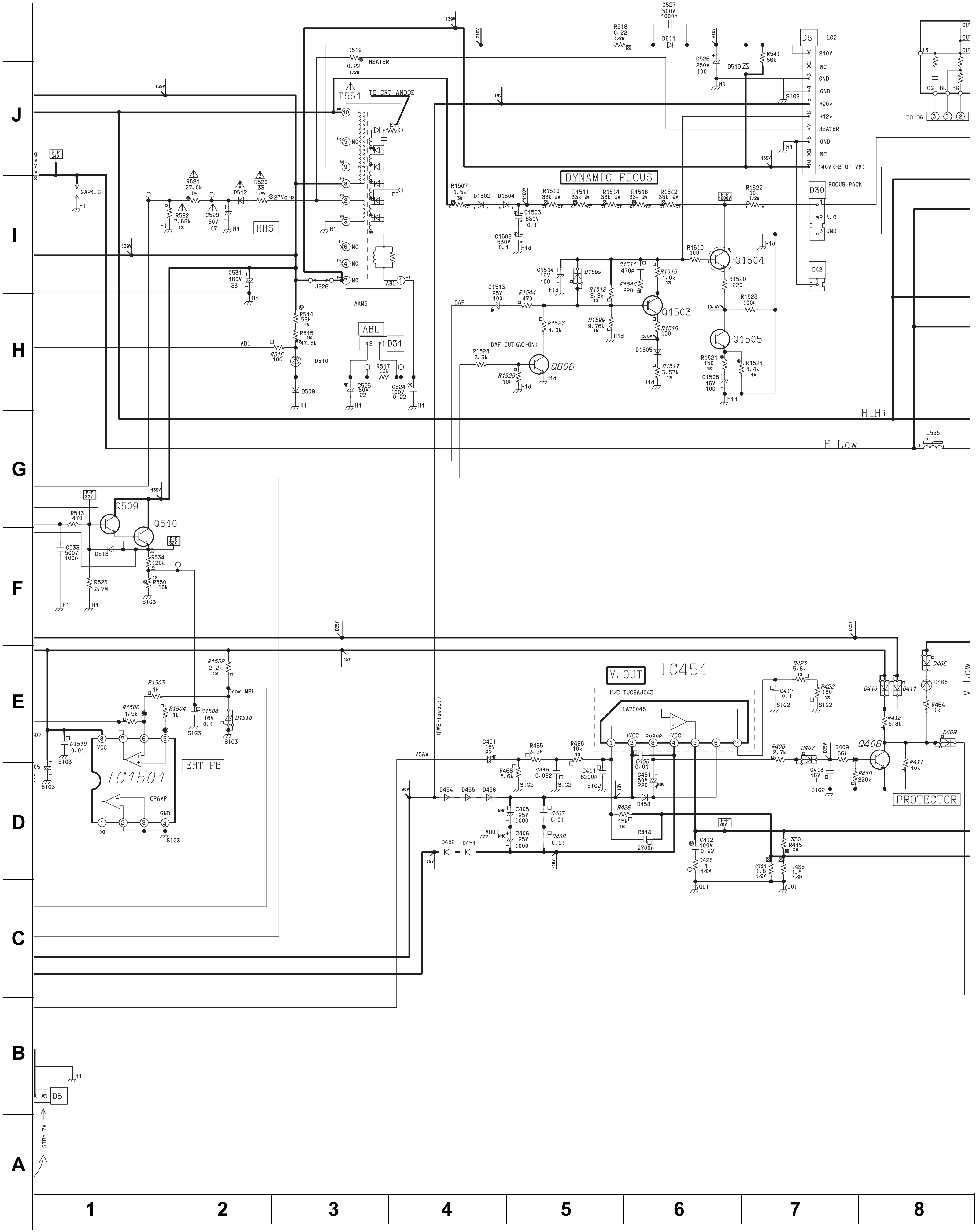

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
HOT
HOT
HOT
COLD
TNP2AH056 D
IC801
VCC
V REF
OVP
CURRENT SOURSE
IFB
RS LATCH
Q
R
S
V OUT
GND
CLM
FB
TDL
SIGNAL CLUMP
T OFF
Q803
Q801
Q802
R822 2.2k
C832 0.01
R836 100
D818
R833 100
R809 2.2M
C822 50V 22
C826 0.1
R865 15k
C820 0.33
C809 25V 0.022
R816 470
R812 10k
C823 150p
D816
C819 1000p
R817 2.0k 1%
C815 1500p
C855 0.1
C851 0.1
FC C824 35V 150
R814 4.7
D817
L808
D835
R813 560 1/2W
C821 2700p
R815 300
D822
R818 10 1/2W
R820 47 1/2W
D819
R808 0.12 1/2W
R810 0.12 1/2W
R811 0.12 1/2W
L810
L811
L805
L806
P-P 400V
C814 2kV 1000p
C817 2kV 1000p
JS27
R862 33k 3W
AC120V
C807 AC125V 4700p
C805 AC125V 4700p
C806 AC125V 4700p
D801
C810 200V 1000
187V
AC CORD
D7
WHITE
BLACK
C801 AC250V 0.1
F801
JS1
JS2
JS3
JS4
L801
L.F
C802 AC250V 0.082
D802
L802
FOR P9
D10
R800 3.3 5W
AC RELAY
RL801 K6B1ADA00010
RL802 K6B1ADA00010 0.15W 5V 30mA
0.15W 5V 30mA
STAND-BY
DC5V
2.2mmGAP
2.3mmGAP
R832 8.2M
C803 2200p
C804 2200p
NS
TUNER
SIG2
D815
R805 100
R866 3.3k
R867 4.7k
AC ON/OFF
STBY 7V
CHECK DRIVE
C812 25V 470
NHG
TUNER GND
JS13
JS21
JS20
JS22
JS28
SIG2
CONV
H1
C1


J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
HOT
COLD
HOT
COLD
R840 100
R839 2.2k
C808 25V 100
SIG2
R835 100
D34
IC802
SE139NLF
140V
L817 68uH
R857 1 1W
139V
TPD14
R858 1 1W
R860 2.2k 1/2W
C848 16V 100
R859 10k
Q854
R846 22k
R847 2.7k
D837
SOS
IC811
P-P 20V
C839 1kV 330p
L820
D828
L826 33u
TPD12
20V
C837 25V 4700
CONV V-AMP
CONV
C841 25V 4700
P-P -20V
L821
D829
L827 33u
TPD11
-20V
C842 1kV 330p
P-P 400V
L810
L811
L805
L806
C814 2kV 1000p
C817 2kV 1000p
R811 0.12 1/2W
T801
V1
V2
P1A
P1B
NC
P2A
P2B
S7
S8
S9
S4
S1
S5
S3
S2
S6
SOUND
SIG2
CONV
+20V
-20V
C831 2kV 820p
P-P 140V
L815
D825
L816
C816 2kV 820p
C830 160V 470
C806 AC125V 4700p
187V
C810 200V 1000
D801
C836 1kV 330p
L819
TPD13
L825 33u
C834 35V 2200
FC
MAX A
C844 1kV 330p
JS30
D830
TPD10
AUDIO 23V
C843 35V 2200
C849 0.022
C846 1kV 330p
JS31
D831
C845 35V 2200
NS
C825 1000p
RL802
K6B1ADA00010
0.15W 5V 30mA
R015 27k 1W
DC5V
SET 5V
AC ON/OFF
STBY 7V
TUNER GND
D1
A1
NC
TUNER GND
TUNER GND
STBY 7V
STAND BY GND
P_BTL 40V
AC ON/OFF
C_BTL 40V
-20V
GND (SOUND)
-20V
GND (SOUND)
+20V
GND (SOUND)
+20V

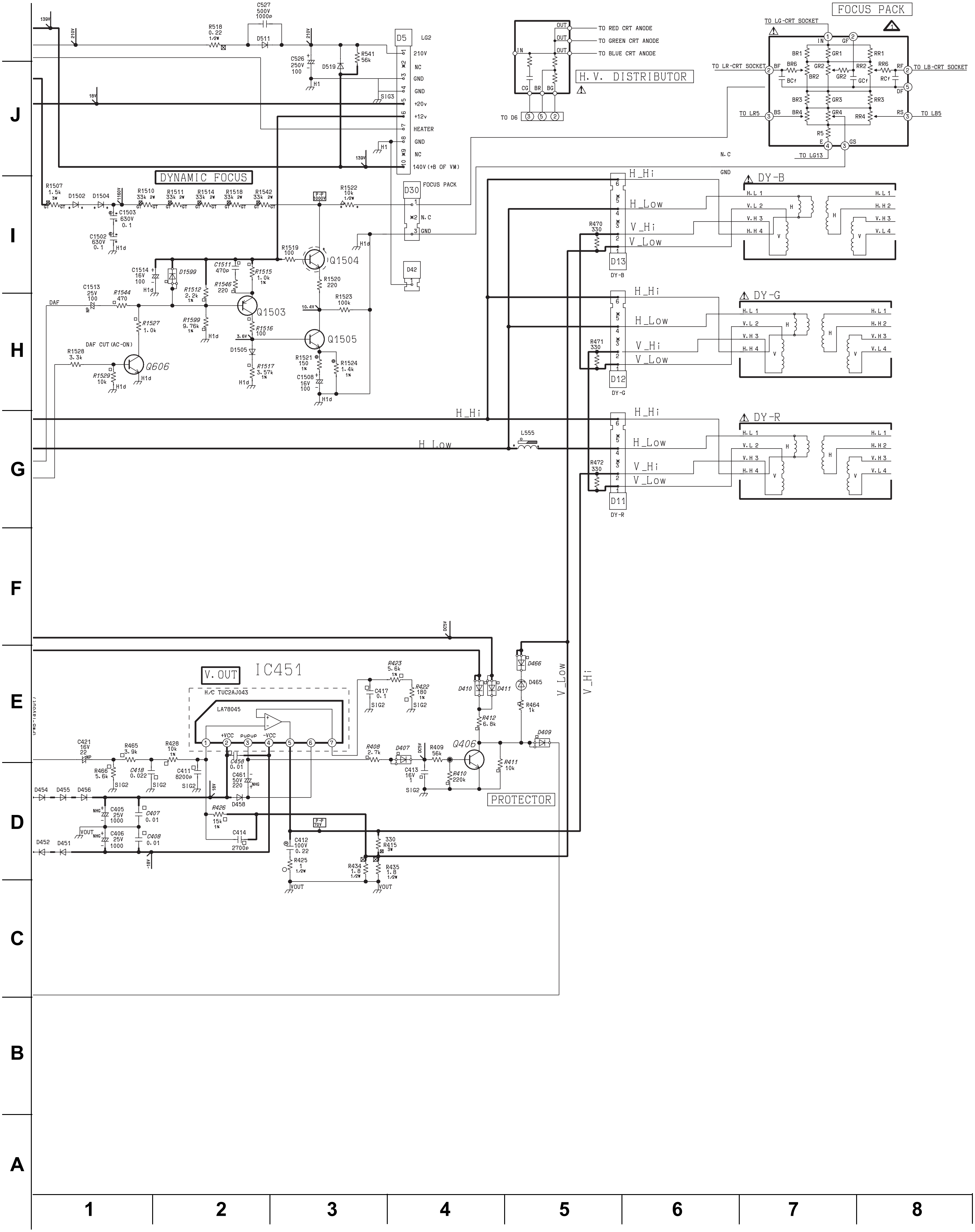

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IC802
SE139NLF
SIG2
L817
68uH
140V
R857
1
1W
130V
TPD14
R858
1
1W
R860
2.2k
1/2W
C848
16V 100
R859
10k
Q854
R846
22k
R847
2.7k
D837
SOS
L826
33u
TPD12
20V
C837
25V
4700
CONV V-AMP
CONV
C841
25V
4700
L827
33u
TPD11
-20V
C842
1kV
330p
C831
2kV
820p
L816
D825
C830
160V
470
TPD13
L825
33u
C834
35V
2200
D827
MAX A
TPD10
AUDIO 23V
C849
0.022
C845
35V
2200
R015
27k
1W
D515
C535
25V
470
R503
18
2W
C501
25V
100
C502
1
R504
270
3W
T501
C503
500V
0.001
D501
HD1
JS18
Q512
12V
C601
16V
330
FC
C602
0.01
SIG3
R512
10k
D520
R502
68
P-P
42V
P-P
12V
Q501
R501
100k
D502
C510
220p
R561
10k
Q513
R560
100
R562
100k
IC805
C852
25V
100
C889
25V
0.47
C890
0.01
C854
16V
100
R7060
0.27
1W
R7061
1k
C7017
0.01
C7060
NHG
16V
100
Q7060
R7062
10k
Q7061
R7063
10k
D7060
R7059
100k
CONV-18V
R7064
10k
C7061
16V 100
NHG
R7065
1k
C7015
0.01
R7066
0.27
1W
IC7001
STK392-110
GH
RV
RH
C7033
0.1
R7026
2.2k
Q7006
C7001
25V
2.2
R7024
4.7k
R7023
27k
R7045
10k
R7030
2.2k
R7040
10k
R7031
2.2k
R7041
10k
GH-OUT
RV-OUT
RH-OUT
GREEN RED BLUE
GV GH CY-G D15
RV RH CY-R D14
BV BH CY-B D16
TP001
TP002
TP003
TP004
TP005
TP006
TP007
TP008
TP009
TP010
TP011
TP012
L7001
L7002
L7003
L7004
L7005
L7006
R7001
82
2W
R7002
120
2W
R7003
82
2W
R7004
120
2W
R7005
82
2W
R7006
120
2W
GV-R
GV
GH
GH-R
RV-R
RV
RH
RH-R
BV-R
BV
BH
BH-R
R7027
3.3k
R7029
3.3k
R7032
3.3k
GH-R
RV-R
RH-R
R7012
2.2
2W
R7013
2.2
2W
R7014
2.2
2W
D1503
BV-OUT
BH-OUT
GV-OUT
D21
DC1
GND
C_SDA
C_SCL
GND
WP
HBLK
H-SYNC
HD
VD
SET5V
D22
DC2
GND
BV
BH
GV
GH
RV
STBY 7V
L888
68uH
TPD22
FBP
HD
D1
A1
TUNER GND
TUNER GND
NC
NC
STBY 7V
STAND BY GND
P_BTL 40V
AC ON/OFF
C_BTL 40V
-20V
GND (SOUND)
-20V
GND (SOUND)
+20V
GND (SOUND)
+20V
D2
A2
GND
SOS
GND
ABL
SOS3 (CONV)
GND
GND
20V
20V
FBP
20V
HD
20V
HD/SD
EW
HBLK
GND
H-SYNC
GND



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
139V
P-P 1450V
C535 25V 470
R503 18 2W
C501 25V 100
HD1
C502 1
R504 270 3W
T501
P
S
C503 500V 0.001
D501
L500
L501
D516
R506 0.47 1W
R505 12 1W
Q551
C512 2kV 1000p
C522 2kV 1800p
C523 2kV 1800p
C518 2kV 220p
C519 2kV 220p
P-P 25V
D504
R542 JW
C520 50V 0.01
R535 3.9k
D503
C514 2200p
C511 2kV 2200p
L515
L516
C513 400V 0.01u
L511
L510
C708 100V 6.8
L704
C509 200V 0.47
P-P 340
GAP1.6
H1
R521 27.0k 1%
R522 7.68k 1%
C528 50V 47
D512
P-P 42V
P-P 12V
Q501
JS18
R525 1.5k
HD
L701 10
C703 200V 0.1u
L702
C702 2kV 270p
D702
PCC
P-P 80
P-P 140
L703 1.5m
R708 4.7 5W
C531 160V 33
C704 500V 390p
Q701
R706 68 1/2W
D634
FBP TO GC2
ABL
R1505 1k
R1502 2.2k
IC701
C707 0.01
C701 16V 100
SIG3
D1503
R1506 1k
C1506 0.01
D1506
R1509 1k
C1509 16V 1
VCC
R704 1k
R643 100
R621 10k
R624 100
R622 1.5k
GND
Comparator
HHS
PCC
EW DRIVE FROM GC2
H DRIVE FROM GC2
FBP
EW
DAF
HHS
HD
P-P 32V
R513 470
Q509
Q510
C533 500V 100p
D513
R534 120k
R523 2.7M
R550 10k
-20V
GH
RV
RH
IC7002
STK392-110
BV
BH
GV
C7018 0.01
C7006 25V 220
C7016 0.01
C7004 25V 220
C7032 0.1
C7034 0.1
C7035 0.1
C7002 25V 2.2
Q7007
R7034 27k
R7035 4.7k
R7036 2.2k
R7046 10k
R7030 2.2k
R7031 2.2k
R7040 10k
R7041 10k
R7037 2.2k
R7038 2.2k
R7047 10k
R7048 10k
R7026 2.2k
R7045 10k
CONV
GH-OUT
RV-OUT
RH-OUT
BV-OUT
BH-OUT
GV-OUT
R7027 3.3k
R7029 3.3k
R7032 3.3k
R7052 3.3k
R7055 3.3k
R7058 3.3k
GH-R
RV-R
RH-R
BV-R
BH-R
GV-R
R7012 2.2 2W
R7013 2.2 2W
R7014 2.2 2W
R7015 2.2 2W
R7016 2.2 2W
R7011 2.2 2W
12V
R1532 2.2k 1%
R1503 1k
R1508 1.5k
R1504 1k
C1504 16V 0.1
D1501
From M
D1507
C1510 0.01
C1505 16V 100
IC1501
EHT FB
OPAMP
EHTFB
C7165 47 35V
C7150 47 35V
D22
DC2
D23
DC3
WP
HBLK
H-SYNC
HD
VD
SET5V
GND
YS
+20V
OSD_R
OSD_G
OSD_B
SDA
SCL
DAF
C1
D453
(PWB-layout)
STBY 7V
SIG2
D3
A3
EW
HD (TO CONV)
VD (TO CONV)
C_SDA
C_SCL
D4
A4
SET5V
OSD_R
OSD_G
OSD_B
SDA2
SCL2
HHS DET
EFT-ADJ
EFTFB
DAF-CUT
V_SAW
D6
STBY 7V
EHT F/B (R)
EHT CAPA GND
EHT REG. GND
TO EHT SEPA.



J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
T551
TO CRT ANODE
EHT
FO
ABL
AKME
HEATER
R519 0.22 1/2W
139V
210V
18V
GAP1.6
R521 27.0k 1%
R522 7.68k 1%
C528 50V 47
D512
R520 33 1/2W
27Vo-p
HHS
C531 160V 33
JS26
R514 56k 1%
R515 1% 47.5k
R516 100
D510
D509
ABL
D31
R517 10k
C525 50V 22
C524 100V 0.22
R518 0.22 1/2W
C527 500V 1000p
D511
C526 250V 100
D519
R541 56k
D5
LG2
210V
NC
GND
GND
+20v
+12v
HEATER
GND
NC
140V (+B OF VM)
SIG3
DYNAMIC FOCUS
R1507 1.5k 3W
D1502
D1504
1160V
R1510 33k 2W
R1511 33k 2W
R1514 33k 2W
R1518 33k 2W
R1542 33k 2W
P-P 1000V
R1522 10k 1/2W
D30
FOCUS PACK
N.C
GND
C1503 630V 0.1
C1502 630V 0.1
H1d
C1514 16V 100
D1599
C1511 470p
R1515 1.0k 1%
R1519 100
Q1504
R1520 220
D42
C1513 25V 100
R1544 470
DAF
R1512 2.2k 1%
R1546 220
Q1503
R1599 9.76k 1%
R1527 1.0k
R1516 100
R1523 100k
10.4V
3.6V
Q1505
D1505
R1517 3.57k 1%
R1521 150 1%
R1524 1.4k 1%
C1508 16V 100
DAF CUT (AC-ON)
R1528 3.3k
Q606
R1529 10k
H_Hi
H_Low
L555
IN
OUT
CG
BR
BG
TO D6
P-P 340
P-P 32V
Q509
Q510
R513 470
C533 500V 100p
D513
R534 120k
R550 10k
R523 2.7M
H1
SIG3
DC5V
12V
R1532 2.2k 1%
From MPU
R1503 1k
R1508 1.5k
R1504 1k
C1504 16V 0.1
D1510
C1510 0.01
VCC
IC1501
OPAMP
GND
EHT FB
(PWB-layout)
VSAW
C421 16V 22 NP
R465 3.9k
R466 5.6k
C418 0.022
R428 10k 1%
C411 8200p
SIG2
V.OUT
IC451
H/C TUC2AJ043
LA78045
+VCC
PUPUP
-VCC
C458 0.01
C461 50V 220 NHG
18V
D458
R426 15k 1%
C414 2700p
20V
D454
D455
D456
C405 25V 1000
C407 0.01
C406 25V 1000
C408 0.01
VOUT
D452
D451
-19V
-18V
R423 5.6k 1%
C417 0.1
R422 180 1%
R408 2.7k
D407
R409 56k
C413 16V 1
R410 220k
Q406
R411 10k
PROTECTOR
P-P 70V
C412 100V 0.22
R425 1 1/2W
330 R415 3W
R434 1.8 1/2W
R435 1.8 1/2W
D410
D411
R412 6.8k
D466
D465
R464 1k
D409
V Low
D6
STBY 7V


DYNAMIC FOCUS
FOCUS PACK
H.V. DISTRIBUTOR
TO RED CRT ANODE
TO GREEN CRT ANODE
TO BLUE CRT ANODE
TO D6
TO LG-CRT SOCKET
TO LR-CRT SOCKET
TO LB-CRT SOCKET
TO LR5
TO LB5
TO LG13
DY-B
DY-G
DY-R
H_Hi
H_Low
V_Hi
V_Low
D5
LG2
210V
NC
GND
+20v
+12v
HEATER
140V (+B OF VM)
D30
D42
D13
D12
D11
C527 500V 1000p
R518 0.22 1/2W
D511
C526 250V 100
D519
R541 56k
SIG3
R1507 1.5k 3W
D1502
D1504
C1503 630V 0.1
C1502 630V 0.1
R1510 33k 2W
R1511 33k 2W
R1514 33k 2W
R1518 33k 2W
R1542 33k 2W
R1522 10k 1/2W
P-P 1000V
Q1504
Q1503
Q1505
Q606
R1519 100
R1520 220
R1523 100k
C1511 470p
R1515 1.0k 1%
R1546 220
R1512 2.2k 1%
R1599 9.76k 1%
C1514 16V 100
D1599
C1513 25V 100
R1544 470
DAF
R1527 1.0k
DAF CUT (AC-ON)
R1528 3.3k
R1529 10k
R1516 100
D1505
R1517 3.57k 1%
R1521 150 1%
R1524 1.4k 1%
C1508 16V 100
R470 330
R471 330
R472 330
L555
V.OUT
IC451
H/C TUC2AJ043
LA78045
+VCC
PUPUP
-VCC
C421 16V 22
R465 3.9k
R466 5.6k
C418 0.022
R428 10k 1%
C411 8200p
C458 0.01
C461 50V 220
D458
R426 15k 1%
C414 2700p
C412 100V 0.22
R425 1 1/2W
R423 5.6k 1%
C417 0.1
R422 180 1%
D410
D411
D466
D465
R464 1k
R412 6.8k
D409
Q406
R408 2.7k
D407
DC5V
R409 56k
C413 16V 1
R410 220k
R411 10k
PROTECTOR
P-P 170V
R415 330 3W
R434 1.8 1/2W
R435 1.8 1/2W
VOUT
D454
D455
D456
D452
D451
C405 25V 1000
C407 0.01
C406 25V 1000
C408 0.01
18V
-18V
139V
H1
H1d
SIG2
N.C
GND
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8